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INTERIM MEASURES REPORT

PCB Remediation
&
Sewer Cleaning

RHODIA INC

East Marginal Way Facility
Tukwila, Washington

April 1, 1998

Rhodia

April 8, 1998

VIA OVERNIGHT FEDEX

Sylvia Burges
Compliance Officer
RCRA Compliance Section, HW-104
U.S. EPA Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Subject: Interim Measures Report for the Rhodia Inc Tukwila, WA Facility
Consent Order No. 1091-11-20-3008(h)
EPA ID No. WAD 00928 2302

Dear Ms. Burges:

Enclosed please find two copies of the Interim Measures Report for the Rhodia Inc Tukwila, Washington facility. This document has been prepared in accordance with the requirements of the Administrative Order on Consent No. 1091-11-20-3008(h), the RFI Workplan (December 1993), and the Addendum to the RFI Workplan (July 1994).

If you need further information, please feel free to call me at (732) 821-3325.

Sincerely,

Edwin Liu
Remediation Project Manager

EL/ls
enclosure (2 copies)

cc: Byung Maeng/Ecology NWRO
Martha Turbey/Ecology NWRO
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Section 1

Introduction

Environmental sampling during the RFI indicated that a concrete compressor pad and the underlying soil were contaminated with PCBs. This area was remediated in March and April of 1995, and the remediation is described in Section 2.1. Section 2.2 covers remediation of PCBs in soil which became contaminated during the cleaning of one of the sewer lines described in Section 3.1. The trench in which this contamination occurred was remediated in November 1995.

As reported in the Round 3 Data and Sewer Sediment Technical Memorandum of December 1996, some sediments in the site's underground sewer lines contained contaminants above the SQS or the CSL/MCUL. These lines were cleaned between July and September of 1995. The cleaning process is described in Section 3.1. Sections 3.2 and 3.3 cover the cleaning of an above-ground oil/water separator and a stormwater storage tank, respectively.

SECTION 2

Section 2

PCB Remediation

2.1 Autoclave Compressor Pad Remediation

2.1.1 Background and Objectives

Based upon previous environmental sampling and analysis at the Rhone-Poulenc facility located at 9229 E. Marginal Way South, Seattle (Tukwila), Washington, Rhone-Poulenc Inc. (RPI) determined that significant levels of Aroclor 1254 contamination were detected in the area of the Autoclave Compressor Pad; specifically, in the concrete pad and the soil underlying the pad. The levels of PCBs detected indicated that the material would have to be excavated and disposed in accordance with TSCA regulations. Excavation of an area approximately 15 x 15 feet, possibly down to the groundwater interface, was planned.

RPI retained Terra Nova Environmental Sciences (Terra Nova) to assist RPI in the process of performing the work required to assure that RPI was in full compliance with all relevant and appropriate local, state and federal regulations prior to, and during, planned decommissioning/demolition activities. Terra Nova's responsibilities were to oversee remedial activities on site, determine what material was to be removed, and collect and analyze post-excavation samples to determine if removal efforts were successful. Terra Nova utilized an immunoassay PCB soil screening technology, approved by the USEPA, to assist in initial clean/dirty soil determinations. This screening method, designed to provide real-time PCB results, assisted RPI in making more accurate decisions when determining how much soil to excavate. These real-time PCB results reduced the guesswork and eliminated sending unnecessary samples that were above the action level to the lab.

One of the goals of this remediation project was to minimize equipment downtime and mobilization/demobilization costs. By utilizing this PCB screening technology, RPI was able to avoid excessive numbers of high cost/quick turnaround analyses that would normally be required to meet project goals. By having a fixed laboratory analyze only the samples that demonstrate "clean" results in the PCB screening test, RPI also avoided the added costs of re-excavating and re-analyzing "hot" areas.

2.1.2 Environmental Sampling

2.1.2.1 Approach to Sampling

Based on criteria found in the *USEPA Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup*, it was originally estimated that 10 - 20 PCB samples would be required. USEPA Document 560/5-86, May 86, specifies sampling grid layout and frequency. All samples must be below the action level (10 mg/kg) in order for excavation to be completed; otherwise, additional excavation and sampling would be required to verify cleanup.

Soil Screening Test, a USEPA-approved field screening test (Method 4020). Screening samples were used to distinguish between clean and contaminated areas and were also used to pretest actual samples being sent to the lab. All samples with positive screening results (>8 mg/kg PCB) were considered to be contaminated and to require additional excavation. All samples with negative screening results (<8 mg/kg PCB) were considered "clean", and a confirmatory sample was collected and analyzed by a fixed laboratory. The screening test resulted in real time decisions for additional excavation, if required, and minimized contractor downtime while awaiting final lab analysis.

2.1.2.2. Quality Assurance/Quality Control

2.1.2.2.1 Sampling Location and Equipment

Sample Location	Parameter/ Matrix	Sampling Equipment	Fabrication	Dedicated
Post-excavation Soil Samples	PCBs	Trowels	Stainless Steel	Yes (pre-cleaned)

2.1.2.2.2 Decontamination Procedures

a. Physical Removal
b. Detergent Wash (Alconox®) and Scrub
c. Tap Water Rinse
d. Distilled/DI Water Rinse
e. Pesticide-Grade Acetone Rinse
f. Pesticide-Grade Hexane Rinse
g. Air Dry
h. Aluminum Foil Wrap

2.1.2.2.3 Sample Handling and Shipment

Each of the sample bottles was sealed and labeled according to the following protocol: Bottle labels were prepared by Pace Laboratory. Information included on the labels was sample number, analysis requested, and preservative used. Sample jars were placed in foam sleeves and bubble wrapped to prevent breakage during shipment. Sealed bottles were placed in large sample shuttle coolers and packed with double-bagged wet ice to keep the samples cool during transport to the laboratory. Samples were shipped under chain of custody to Pace, Gulf South Laboratory in New Orleans, LA via Federal Express.

Sample shuttles were accompanied by chain of custody forms specifying the lab analysis to be conducted on each sample. The shuttles were sealed with custody seals and were not opened until received at Pace.

2.1.3 Soil Removal and Sampling Activities

2.1.3.1 Description of Removal Activities

Terra Nova Environmental Sciences, conducted a detailed post-excavation screening and sampling event for PCBs in support of CEcon Corporation's removal activities on March 27 through March 31, 1995, at the Rhone-Poulenc facility on East Marginal Way South in Seattle, Washington.

CEcon Corporation began excavation on March 27, 1995. Initially, the six-inch thick concrete slab surrounding the compressor pad was broken with a Case 580K Hammerhoe and a Caterpillar 205LC Trackhoe. Broken concrete was placed on a 60-mil poly tarp located adjacent to the excavation. The concrete slab was removed to expose an area of underlying soil approximately 16' by 21' in size (See Figure 1). The surface of the concrete (2") was infused with a reddish/pink color indicating potential contamination with compressor oil. Soil removal was initiated after all concrete was cleared from the excavation. The Case 580K was converted to a backhoe to assist in the excavation. Overburden soil was removed from the excavation around the compressor pad (4' x 5' x 3' thick) to expose a 10'x 12'x 2.5' thick footing. Excavated soil was staged on a 60-mil poly tarp located adjacent to the excavation.

Several underground pipes and old electrical conduits were encountered (See Figure 1) during initial excavation. A drain line and P-trap were located next to the compressor pad; however, this P-trap was not connected to a discharge pipe. Several abandoned electrical conduits passed through or terminated in the excavation. According to a Rhone-Poulenc employee on site, all of the piping and conduit uncovered during the excavation had been abandoned for some time and was no longer active. All of the lines encountered appeared to be filled with soil and sediment and did not appear to be able to transport liquid. Based upon historical and visual information available at that time, it appeared that the piping and conduit did not represent a significant contaminant transport threat. A decision was made by RPI and Terra Nova to collect perimeter samples in the areas surrounding piping entry and exit from the excavation in order to determine if piping and conduit acted as an accelerated route for contaminant migration from the compressor pad area. Piping and conduit removed during the excavation was placed adjacent to the excavation.

During the removal process, water began to slowly enter the excavation from the underside of the concrete slab. The water entering the excavation did not originate from piping and conduit uncovered during soil removal. Rather, this water seemed to be perch water that had accumulated under the concrete slab. As the excavation was advanced, water entered from various depths at the sides of the excavation. Standing water was allowed to accumulate in the excavation and was pumped to a 20,000-gallon "Rain for Rent" portable storage tank. Excavated soil, staged on 60-mil poly tarp located adjacent to the excavation, was oriented sc as to allow excess water to drain from the soil pile back into the excavation.

Broken concrete from the pad was combined with the concrete slab material. Concrete from the footer was placed on a separate 60-mil poly tarp located adjacent to the excavation.

Chip samples were collected from the concrete that was generated during demolition of the concrete slab, compressor pad, and footer. CEcon personnel collected the chip samples and had the samples analyzed by a local laboratory to facilitate waste characterization and disposal.

Appendix A contains notes regarding the remediation.

2.1.3.2 Post-excavation Sampling

On 3/27/95 eight (8) perimeter soil samples were collected and analyzed by USEPA Method 4020 for field screening of PCBs using the ENSYS PCB Test Kits. Perimeter sample collection was biased to areas of piping entry and exit from the excavation in order to determine if piping and conduit acted as an accelerated route for contaminant migration. Seven (7) soil samples were also collected at the base of the excavation, surrounding the footing of the compressor pad (see Figure 1). All initial samples were collected after excavation of soil to a depth of six (6') feet (the invert of the footing) below grade. Five (5) samples (two perimeter, three base samples) demonstrated positive results (>8 ppm) with the ENSYS PCB Test Kit field screening. When a positive result (>8 ppm) was determined, excavation proceeded to greater depth. When a negative result from a sample point was determined, the sample was split and sent to the lab for laboratory confirmation of a negative result by USEPA Method 8080.

Samples collected on 3/27/95 were not delivered to the laboratory due to an error by the common carrier (Federal Express). The 3/27/95 suite of samples was analyzed by the ENSYS PCB Test Kit method, however. Results of the ENSYS PCB field screening indicated the need for additional excavation. Excavation continued on 3/28/95. Since water re-entered the excavation, it was not possible to segregate clean soil from dirty soil; therefore, the bottom of the excavation was advanced to eight (8') feet below grade. A suite of sixteen (16) post-excavation samples (eight perimeter, eight base samples) were collected on 3/28/95. All sampling methodology was in accordance with standard practices as described in the *NJDEP Field Sampling Procedures Manual (FSPM), May 1992.* Dedicated field equipment was used for each sampling point. All samples collected from the excavation were placed under chain of custody and were sent to PACE for PCB analysis by USEPA Method 8080.

Seven (7) samples (all base samples) from the 3/28/95 suite of sixteen (16) samples were found to contain PCBs (Aroclor 1254) at concentrations greater than 10 mg/kg. None of the perimeter samples were found to contain PCBs at concentrations greater than 10 mg/kg. Results of this testing indicated the need to continue excavation vertically. Excavation continued on 3/29/95. The bottom of the excavation was advanced to ten (10') feet below grade. An additional suite of seven (7) post-excavation samples were collected from the base of the excavation on 3/29/95. Table 1 shows the laboratory results for each sample location.

2.1.3.3 Comparison of Results to USEPA Action Levels for PCBs in Soils

As shown in Table 1, PCBs were detected in two (2) post-excavation samples where soils still remained on site. The soil concentrations detected were 1.93 mg/kg (PE-2A) and 2.42 mg/kg (PE-7A) of Aroclor 1254. These concentrations were significantly below the USEPA soil cleanup level of 10 mg/kg for PCBs in soils at industrial facilities. All other analytical results in soils were found to be below USEPA's most stringent action levels for soils.

2.1.4 Disposal of Soil, Concrete, and Water

Concrete slab debris, compressor pad debris, piping, and soil were profiled with APTUS, Inc., in Aragonite, Utah, as TSCA-regulated waste containing 0 to 10 percent PCB. This profiled waste (AP 149917) was approved on March 6, 1995, for incineration at APTUS. Seven (7) truckloads (Manifests 00001 to 00007), totaling 290,560 pounds, were loaded between March 31 and April 6, 1995. Copies of manifests, certificates of disposal/destruction, and profiles are found in Appendix B.

Concrete footer debris was profiled with Chemical Waste Management as non-TSCA, non-RCRA, and non-Washington State Dangerous Waste containing 3 to 21 mg/kg PCB. This profiled waste (BR 3421) was approved on April 11, 1995, for landfilling at the Subtitle C facility in Arlington, Oregon. The load (25,420 pounds) was given the manifest number 00008 and loaded on a truck on April 20, 1995.

The water accumulated in the rental tank was filtered through 5-micron fabric filters and activated carbon filters, then discharged to the Metro sewer. The only contaminant in the water that did not initially meet the Metro discharge criteria was PCB, at 420 ug/L. To accommodate the filtration, a second "Rain-for-Rent" rental tank was brought on site. Filtration of the water began on April 11, 1995, and continued intermittently until July 1, 1995. The PCB concentration had decreased to 170 ug/L, and Metro approved discharging of this water. Seven thousand (7,000) gallons was discharged to Metro between July 26 and July 28, 1995.

Both rented tanks were cleaned, tested for PCBs and returned . One hundred (100) gallons of tank wash water containing 230 ug/L PCB was discharged to Metro on August 9, 1995, after obtaining the agency's approval. Also generated during tank cleaning were two (2) drums of combined sediment and water, one (1) drum of water containing suspended solids, and one (1) drum of used fabric filters.

These four (4) drums were profiled by AETS for landfilling at Chemical Waste Management's Subtitle C hazardous waste landfill in Arlington, Oregon. The profile BR 2295 was approved on October 19, 1995, for waste containing 2.4 mg/kg PCB. The waste was classified as non-TSCA and non-RCRA regulated and non-Washington State Dangerous Waste. The drums left the site on October 30, 1995, as manifested load 95382. See Appendix B for copies of manifests, certificates of disposal and destruction, and profiles.

2.1.5 Filling and Paving of Excavation Site

The autoclave compressor pad excavation was filled with surface soil from the area west of the former RCRA storage area and with sand from the former cooling tower foundation. The soil was comprised of pit run brought to the site when the RCRA storage area was clean-closed in 1992. The sand fill, from off site, was placed in the cooling tower foundation during demolition activities in 1991. After the compressor pad excavation site was filled, the fill was compacted and covered with asphalt in July 1995 as part of site leasing activities.

2.2 Piping Trench Soil Remediation

2.2.1 Background and Objectives

Based upon previous sampling and analysis of sediment found in a decommissioned underground drain line at the Rhone-Poulenc facility, RPI determined that significant levels of Aroclor 1254 contamination were present in sediment found in the bottom of this 8-inch diameter terra cotta drain pipe. The pipe was uncovered and broken during the excavation of a trench for the installation of underground power cables at the facility. Sampling of the sediment in the bottom of the pipe confirmed elevated levels of PCB Aroclor 1254. Latent water and PCB-contaminated sediment from the pipe may have impacted soils in the trench when the pipe was broken during excavation. The original trench excavation was approximately 26' x 3' in area and averaged approximately 2.5' in depth (Figure 2). Soil removed from the trench for the excavation/installation of the power line was stockpiled adjacent to the excavation (south side). The excavation and soil pile were covered with plywood and plastic to reduce the effects of wind and stormwater erosion.

RPI retained Terra Nova to assist RPI in the process of performing the work required to assure that RPI was in full compliance with all relevant and appropriate local, state, and federal regulations prior to, and during, planned soil excavation activities. Terra Nova's responsibilities were to oversee remedial activities on site, determine what material was to be removed from the site, and collect and analyze post-excavation samples to determine if removal efforts were successful. As in the earlier compressor remediation, Terra Nova utilized an immunoassay PCB soil screening technology to expedite this remediation project.

2.2.2 Approach to Environmental Sampling

Based on criteria found in the USEPA *Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup*, it was originally estimated that 20 PCB samples would be required. This document, USEPA 560/5-86 May 86, specifies sampling grid layout and frequency. All samples must be below the action level (10 mg/kg) in order for excavation to be completed; otherwise, additional excavation and sampling would be required to verify cleanup.

To determine cleanliness of lines and keep the number of 24-hour turnaround confirmatory samples to a minimum, Terra Nova utilized the ENSYS PCB Rapid Soil Screening Test, as in the compressor pad remediation discussed earlier.

For a discussion of Quality Assurance/Quality Control considerations, see Section 2.1.2.2 in the Compressor Pad portion of this report. The laboratory used for analysis of samples generated from this piping trench remediation was S-Cubed of San Diego, California.

2.2.3 Soil Removal and Sampling Activities

2.2.3.1 11/2/95 and 11/3/95 Removal Activities and Sampling Event

2.2.3.1.1 Removal Activities

Terra Nova conducted a detailed post-excavation screening and sampling event for PCBs in support of CEcon Corporation's removal activities on November 2 and 3, 1995.

CEcon began excavation on November 2, 1995. Based upon an initial round of ENSYS PCB soil screening (USEPA Method 4020) results, the existing trench was excavated to an average dimension of 5'(w) x 31' (l) x 3.75' (d). Excavated soil was staged on 6-mil poly sheeting located adjacent to the excavation.

2.2.3.1.2 Post-excavation Sampling

Five (5) perimeter (underlying staged soil) samples and 25 post-excavation samples (30 total) were collected and analyzed by USEPA Method 4020 for field screening of PCBs using the ENSYS PCB Test Kits. The original soil pile adjacent to the excavation was relocated onto plastic sheeting. After relocation of the soil pile, samples (95SP-RP to 99SP-RP) were collected at the base of the former location of the soil pile. All initial samples (1-RP to 23-RP) collected at the base of the trench were collected after excavation of soil to a depth of 45 inches (3.75') below grade. Two samples 24-RP and 25-RP were collected at the ground surface, on the edge of the trench, and served as background samples. Five (5) samples (three post-excavation, two soil pile base samples) demonstrated positive results (>10 ppm) with the ENSYS PCB Test Kit field screening. If a positive result (>10 ppm) was determined, excavation proceeded to greater depth. When a negative result from a sample point was determined, the sample was split and sent to the lab for laboratory confirmation of a negative result by USEPA Method 8080. See Table 2 for a summary of laboratory analytical results.

Results of the ENSYS PCB field screening indicated the need for additional excavation in the areas of 2-RP, 18-RP, 19-RP, 98SP-RP, and 99SP-RP. These areas were further excavated. Confirmatory laboratory results indicated that two (2) additional samples exhibited PCB concentrations greater than the USEPA/TSCA soil cleanup level of 10 mg/kg (1-RP: 12.379 mg/kg; and 4-RP: 10.355 mg/kg) even though the ENSYS PCB field screening indicated 1-RP and 4-RP were less than 10 ppm. These two samples (1-RP, 4-RP) were adjacent to one another in the excavation. It was not possible to physically remove the soil required in the vicinity of 1-RP and 4-RP without also removing soil from the vicinity of 2-RP. On 11/2/95 an additional 5'(w) x 5'(l) x 1.5'(d) area of soil was removed from the excavation in the areas of 1-RP, 4-RP, as well as 2-RP. Additional post-excavation samples (1A-RP, 4A-RP) were collected in approximately the same area as 1-RP and 4-RP to determine the need for continued excavation.

Sample 2A-RP was collected earlier when the excavation of this area was completed. The soil PCB concentrations detected in sample 2A-RP indicated that no further excavation was necessary.

The soil PCB concentrations detected in laboratory samples 1A-RP and 4A-RP were 2.48 mg/kg and 0.28 mg/kg of Aroclor 1254, respectively. These concentrations are well below the USEPA/TSCA soil cleanup level of 10 mg/kg for PCBs in soils at industrial facilities. Based upon confirmatory laboratory testing, it was determined that no further excavation of this area was necessary.

ENSYS PCB soil screening results indicated that two of the samples from the bottom of the trench exhibited PCB concentrations greater than the USEPA/TSCA soil cleanup level of 10 mg/kg (18-RP, 19-RP). These two samples were adjacent to one another in the excavation. On 11/3/95 an additional 5'(w) x 5'(l) x 1.5'(d) area of soil was removed from the excavation in the areas of 18-RP and 19-RP. Additional post-excavation samples (18A-RP, 19A-RP) were collected in approximately the same area as 18-RP and 19-RP to determine the need for continued excavation. The soil concentrations detected in samples 18A-RP and 19A-RP were below minimum detection limits (BMDL) and 2.41 mg/kg of Aroclor 1254, respectively. These concentrations are well below the USEPA/TSCA soil cleanup level of 10 mg/kg for PCBs in soils at industrial facilities. Based upon confirmatory laboratory testing, it was determined that no further excavation in this area was necessary.

Additionally, ENSYS PCB soil screening results indicated that two (2) samples from the base of the former location of the soil pile exhibited PCB concentrations greater than the USEPA/TSCA soil cleanup level of 10 mg/kg (98SP-RP, 99SP-RP). On 11/3/95 an additional 10'(w) x 10'(l) x 1'(d) area of soil was removed from the areas of 98SP-RP and 99SP-RP. Additional post-excavation samples (98SAP-RP, 99SAP-RP) were collected in approximately the same area as 98SP-RP and 99SP-RP to determine the need for continued excavation. The soil concentrations detected in samples 98SAP-RP and 99SAP-RP were 0.866 mg/kg and 2.83 mg/kg of Aroclor 1254, respectively. These concentrations are well below the USEPA/TSCA soil cleanup level of 10 mg/kg for PCBs in soils at industrial facilities. Based upon confirmatory laboratory testing, it was determined that no further excavation in this area was necessary.

A decision was made by RPI and Terra Nova to collect perimeter samples in the areas surrounding piping entry and exit from the excavation in order to assess if piping and conduit acted as an accelerated route for contaminant migration from the trench area.

Two (2) samples were collected from the bottom centerline (underneath) of the 8" terra cotta pipe, approximately one (1) foot into the sidewall from where this pipe enters and exits the trench. These samples were collected as part of the set of 25 post-excavation samples. PCBs were detected in both of these samples. Soil concentrations detected were 1,588.71 mg/kg (22-RP) and 114.45 mg/kg (23-RP) of Aroclor 1254. These concentrations are well above the USEPA soil cleanup level of 10 mg/kg for PCBs in soils at industrial facilities. See Section 2.2.3.2 for a description of further excavation and sampling in the vicinity of this pipe.

All sampling methodology was in accordance with standard practices as described in the *NJDEP Field Sampling Procedures Manual (FSPM), May 1992.* All field equipment was field-cleaned and decontaminated according to procedures defined in Section 5.6.4 of the facility's RFI workplan (CH_2M Hill, 1993). All samples collected from the excavation were placed under chain of custody, and analyzed for PCBs by USEPA Method 8080. Samples were collected as recommended in the *USEPA Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup, EPA 560-5-86-026, May 1986.* The actual number of samples required was increased based upon the best professional judgment of the investigators.

2.2.3.1.3 Comparison of Results to USEPA Action Levels for PCBs in Soils

Thirty (30) soil samples were collected from in and around the excavation area for confirmatory analysis. PCBs (specifically Aroclor 1254) were detected in twenty-nine (29) of the initial thirty (30) samples collected from the excavation area. However, only two (2) of the samples sent to the laboratory for confirmatory analysis exhibited PCB concentrations greater than the USEPA/TSCA soil cleanup level of 10 mg/kg (1-RP: 12.379 mg/kg; & 4-RP: 10.355 mg/kg). These two samples were adjacent to one another in the excavation.

An additional 5'(w) x 5'(l) x 1.5'(d) area of soil was removed from the excavation in the areas of 1-RP and 4-RP. Additional post-excavation samples (1A-RP, 4A-RP) were collected in approximately the same area as 1-RP and 4-RP to determine the need for continued excavation. The soil concentrations detected in samples 1A-RP and 4A-RP were 2.48 mg/kg and 0.28 mg/kg of Aroclor 1254, respectively. These concentrations are well below the USEPA/TSCA soil cleanup level of 10 mg/kg for PCBs in soils at Industrial facilities. All other confirmatory analytical results, except for Samples 22-RP and 23-RP which are discussed in the following sections, were found to be below USEPA's most stringent action levels for soils.

2.2.3.2 11/29/95 and 11/30/95 Removal Activities and Sampling Event

2.2.3.2.1 Removal Activities

Due to the high levels (1,588.71mg/kg and 114.45mg/kg) of PCBs found beneath the terra cotta pipe in the trench, RPI contracted with CEcon Corporation and Terra Nova to conduct further excavation and sampling, respectively, surrounding the clay piping entering the excavated trench. The foundation and floor of a former structure restricted access to the northern side of the trench. A rail siding bed and track restricted access to the southern side of the trench. The use of heavy excavating equipment to access the potentially contaminated areas was not possible without considerable demolition efforts. It was expected that contamination was limited to the small area immediately surrounding the clay pipe. Hand excavation was chosen as the most appropriate removal measure, given the small quantity of material expected to be removed and the lack of access to the area of concern.

2.2.3.2.2 Post-excavation Sampling

It was originally estimated that four (4) PCB samples would be required to verify cleanup. This estimate was based on criteria found in the *USEPA Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup.* This document, EPA 560/5-86 May 86, specifies sampling grid layout and frequency. All samples must be below the action level (10 mg/kg) in order for excavation to be completed; otherwise, additional excavation and sampling would be required to verify cleanup.

The area surrounding the clay pipe was excavated approximately three (3') feet outward from the trench (north & south), along the clay piping runs (Figure 2). After completion of the hand excavation of the area surrounding the clay pipe, six (6) soil samples were collected from in and around the clay pipe entering the trench. These six samples were sent to the laboratory for confirmatory analysis.

2.2.3.2.3 Comparison of Results to USEPA Action Levels for PCBs in Soils

PCBs (specifically Aroclor 1254) were detected in five (5) of the six (6) samples collected from the excavation area. However, only one (1) of the samples sent to the laboratory for confirmatory analysis exhibited PCB concentrations greater than the USEPA/TSCA soil cleanup level of 10 mg/kg (PE-N: 31.12 mg/kg Aroclor 1254). This sample was collected directly under the clay pipe on the north side of the excavation. All other analytical results were found to be below USEPA's most stringent action levels for soils.

Excavation did not proceed in the vicinity of sample PE-N due to inaccessibility caused by a concrete barrier and railroad tracks. This is an area that will be paved, thus reducing the possibility of exposure pathways. The concentration of PCBs in this sample is below the MTCA Method C Industrial Soils level of 70 mg/kg.

2.2.4 Disposal of Soil

The following soils were generated during the excavation phase of this remediation project:

1) soil from the original excavation of the piping trench
2) soil from the excavation on November 2 and 3, 1995, and
3) soil from the excavation on November 29 and 30, 1995,

The first two staged soils were in three (3) piles and the latter was in eight (8) drums, all adjacent to the excavation site. Soil in each of the piles was sampled by Terra Nova on November 3, 1995. The analytical results for the PCB, Aroclor 1254, were 7.9, 22.2 and 28.7 mg/kg. A composite sample from the piles contained no detectable toluene and no TCLP metals above the limits.

The soil was profiled with Chemical Waste Management for disposal at its Subtitle C hazardous waste landfill in Arlington, Oregon. The profile (BP 2464), which was approved on February 13, 1996, classified the waste as non-regulated under TSCA and RCRA and non-Washington State Dangerous Waste.

CEcon Corporation loaded the soil into trucks on March 6, 1996. The first load (Manifest No. 00014) weighed 60,660 pounds, and the second load (Manifest No. 00015) weighed 49,280 pounds. Only about two-thirds of this second load was comprised of soil from the remediation project. The remainder of the soil was from other projects.

It was verified by telephone that the loads arrived at the Chemical Waste Management landfill on March 6 and 7, 1996.

Also generated during the piping trench excavation project was a drum of broken pieces of sewer pipe and a drum of miscellaneous PCB-contaminated debris and used personal protective equipment. These drums were profiled by AETS for landfilling at Chemical Waste Management's Subtitle C hazardous waste landfill in Arlington, Oregon. The profiled waste (BR 2295) was approved on October 19, 1995, as waste containing 2.4 mg/kg PCB. The material was classified as non-TSCA and non-RCRA regulated and non-Washington State Dangerous Waste. These two (2)drums of waste left the site along with the four (4) drums of waste from the Compressor Pad remediation project. The manifested load 95382 left the site on October 30, 1995.

See Appendix B for copies of manifests, certificates of disposal/destruction, and profiles. Appendix A contains notes regarding waste disposal.

Section 3

3.1 Sewer Cleaning

3.1.1 Background and Objectives

Stormwater from Rhône-Poulenc Inc.'s (RPI's) East Marginal Way Facility in Tukwila, Washington (the Facility) had not been discharged offsite to surface water through storm sewer outfalls since shortly after the plant closed in 1991. Following demolition of the plant, Facility stormwater was discharged to the Municipality of Metropolitan Seattle (Metro) sanitary sewer after appropriate testing. In the spring of 1995, Metro notified RPI that stormwater from the Facility would no longer be accepted after June 1995. This date was later postponed to October 1995. Thereafter, the stormwater runoff from the Facility would need to be discharged through outfalls to the Duwamish Waterway.

During the final period of plant operations, outfall 7 was used to drain most of the Facility stormwater runoff to the Duwamish Waterway. The remainder of the Facility stormwater was directed to the process sewer for use in the manufacturing process. To collect all the stormwater on the site for discharge to the Duwamish Waterway through one outfall, the process sewer and storm sewer lines needed to be interconnected.

Sewer sediments from the Facility were sampled to (1) characterize residual sediments in the sewers, (2) evaluate whether sewer sediments in historical outfall lines may have discharged offsite, and (3) assess whether the process sewers needed to be cleaned before being cross-connected to the storm sewer and used for future collection of stormwater that would ultimately discharge to the Duwamish Waterway.

As discussed in the Round 3 Data and Sewer Sediment Sampling Technical Memorandum (RPI, December 1996), sewer sediment data were compared to the Sediment Management Standards (SMS) Sediment Quality Criteria (SQS). The sewer sediment data indicated that all seven storm sewer outfall samples exceeded the SQS for copper and zinc. Sediments in all the outfalls also exceeded the less stringent SMS Cleanup Screening Level/Minimum Cleanup Level (CSL/MCUL) for copper. The results were similar for the process sewer sediments: 12 of the 13 samples exceeded the SQS for both copper and zinc, while 12 also exceeded the CSL/MCUL for copper. The one sample that did not exceed the SQS for copper (088-SEW) exceeded the SQS and MCUL for 4-methylphenol and the SQS for cadmium and zinc. The sample from the line originally believed to be connected to outfall 2 contained 526 mg/kg Aroclor 1254, a PCB. This value exceeded the CSL/MCUL (TOC-normalized).

Given the need to interconnect the lines and the results of sediment sampling, RPI decided to clean the lines before outfall 7 was re-opened to the Duwamish Waterway. This cleaning would minimize the potential for discharges that could affect contaminant loading of Waterway sediments and exceed potentially applicable stormwater discharge limits. Figure 4 shows the lines that are now being used for stormwater discharge from the Facility and the location where the original storm sewer and former process sewer lines have been cross-connected.

Figures 5 and 6 show the locations of the former storm sewer and process sewer lines, respectively, that were cleaned. Ventilation Power, Inc., a 40-hour-trained contractor, cleaned

a majority of the lines on July 5, 6, 7, 10, 11, and 13, and August 16, 19, and 26, 1995. Because the property is now leased to Northwest Container Services, Inc., the sewer cleaning needed to be scheduled around Northwest Container's operations and so was performed in several shifts on these dates. Ventilation Power used a vacuum truck with a back-pressure sparger to pressure-wash the sewer lines. All accessible storm and process sewer lines were cleaned during July and August except the discharge ends of outfalls 2, 3, and 4, which were cleaned in September. It should be noted, as discussed later, that during outfall cleaning in September, RPI discovered that outfall 2 was not connected to the line containing the PCB contamination.

3.1.2 Outfall 7 Stormwater Sampling

After the lines to outfall 7 were cleaned and necessary cross-connections made, the lines were flushed to remove any remaining loose sediments. Flushing and sampling were done to ensure that stormwater through outfall 7 would not exceed (1) the calculated allowable discharge concentrations (based on information from the Washington State Department of Ecology), (2) Water Quality Criteria (WAC 173-201A) (if [1] was not available), or (3) MTCA Method C surface water concentrations if (1) and (2) were not available. In order to flush the lines, potable water from onsite fire hydrants was directed to the uppermost end of the outfall 7 lines. This rinsing was performed twice to flush the lines prior to sampling. On September 7, water from a third rinsing was sampled. The sample was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); semivolatile organic compounds (semivolatiles); pesticides and polychlorinated biphenyls (PCBs); metals (including hexavalent chromium and mercury); oil and grease; pH; and hardness. The resulting data were compared to the above criteria. Some of the parameters exceeded these criteria (see Table 4). Because of these findings, on September 16, Ventilation Power cleaned the outfall 7 system a second time using the same pressure-wash system.

Since Seattle's rainy season begins in late September or early October, RPI decided to sample an actual storm event to see if the September 16, 1995, cleaning was adequate. To the extent possible, RPI wanted this sampling to follow National Pollutant Discharge Elimination System (NPDES) stormwater sampling procedures even though Ecology had stated that the outfall would not be subject to NPDES stormwater permitting. Sampling under the NPDES procedures includes taking a first flush sample within the first 30 minutes of an acceptable storm event, taking aliquots over the next several hours of the storm event, and combining the aliquots into a composite sample for analysis.

After the decision had been made to use NPDES stormwater sampling procedures and after the September 16 cleaning of the lines, but before the stormwater sampling equipment was in place, a storm event filled the outfall 7 system on October 17. Metro approved the discharge of this water to their system. Additional sediments entered the storm system during the storm. Since sediments tend to settle in the manholes, the sediments in the manholes were removed again.

A rainfall event meeting the NPDES stormwater sampling criteria occurred early in the morning of October 20, 1995. A first flush sample was taken and analyzed for BTEX, oil and grease, semivolatiles, pesticides/PCBs, metals (including hexavalent chromium and mercury), pH, and hardness. Aliquots were taken over the next 1-1/2 hours, composited, and analyzed for semivolatiles, pesticides/PCBs, metals (including hexavalent chromium and mercury), pH, and hardness. These results were compared to the criteria in Table 4. The individual aliquots

for the composite were also analyzed for BTEX; none was detected. All the results were below calculated allowable discharge concentrations, hence the quality of the water in the line was adequate to discharge. On October 26, 1995, RPI received verbal concurrence from Ecology and, on October 27, began discharging stormwater through outfall 7 to the Duwamish Waterway. A chronology of these events is presented in Table 5.

3.1.3 Cleaning of Outfalls 2, 3, and 4

The lines to outfalls 2, 3, and 4 were cleaned separately because they were not going to be connected to the outfall 7 system. Ventilation Power cleaned the outfalls on September 18 through 22, 1995. In order to clean outfalls 2, 3, and 4 from the Slip No. 6 end, RPI needed permission to access Boeing property surrounding the slip; Boeing granted access on September 19. Boeing personnel visited the site, reviewed the workplan, and discussed the outfall cleaning procedures.

On September 20, the outfall 2 discharge end at Slip No. 6 was cleaned. At low tide, AETS (a division of Waste Management, Inc.) and Ventilation Power personnel set up cleaning equipment adjacent to Slip No. 6 to clean the upstream pipe. The end plug, placed in the pipe when the line was taken out of service, was removed and the outfall 2 discharge pipe was pressure washed using a jet-rod. The jet rod reached refusal at 254 feet.

At the start of the outfall 2 line cleaning, it had been assumed that the north-south-trending, 8-inch-diameter clay pipe (i.e., the PCB-contaminated line) was tied to outfall 2. Prior to cleaning the downstream end of outfall 2, this clay pipe was fitted with a ball plug to prevent flooding of the ditch dug to expose the PCB-contaminated line. RPI staff discovered that the jet rod's nozzle "daylighted" in the ditch dug to expose the PCB-contaminated line (see additional information below). The ditch contained significant quantities of water where previously it had been dry. However, the jet rod did not come out of the pipe that was assumed to be connected to outfall 2. Marks in the dirt where the jet rod traveled showed that the rod exited from a 4-inch-diameter concrete pipe approximately 4 feet west of the clay pipe. Figure 7 shows a detail of this area.

3.1.4 Videotaping and Cleaning PCB-Contaminated Line

Gelco, a 40-hour-trained contractor, was contracted to videotape the PCB-contaminated lines leading from the ditch to determine whether the lines were adequately cleaned and to identify branches off the main lines (see Figure 7 for location of pipes within the ditch). On September 18, 1995, Gelco staff attempted to videotape the PCB-contaminated line beginning at the exposed north-trending, 8-inch clay pipe in the ditch (the sediment containing 1.3 percent Aroclor 1254 came from this line); however, sediment in the pipe prevented the camera from getting enough traction to move forward. As a result, on September 19 the line was cleaned prior to videotaping. Gelco staff were unable to return to the site until October 12, when they videotaped the three 8-inch, PCB-contaminated lines leading away from the ditch; the north-trending pipe was re-cleaned at this time. The October 12 videotape indicated that the lines were adequately cleaned.

3.1.5 Blocking Unneeded Lines

As the various sewer lines were cleaned, the unneeded outlets in manholes were grouted and the unneeded catch basins were filled with sand and covered with grout. Two sewer access points where sand could not be compacted were filled with controlled-density fill (CDF)

instead; these access points were the sump pump in the old copper intercept area (sampled as 014-SEW) and the outfall 3 sampling point (sampled as 03-SWO). The major lines that have been grouted are shown in Figures 5 and 6.

3.1.6 Lines Not Cleaned

Certain lines could not be accessed for cleaning purposes; these lines are shown in Figures 8 and 9. Figure 8 illustrates the reasons for not cleaning storm sewer lines, and Figure 9 illustrates the reasons for not cleaning former process sewer lines. The reasons for not cleaning lines included the following: the line was around a corner that the cleaning lance could not get past, the line was connected to a roof drain so that the access point was a 90-degree turn that the lance could not pass, the manhole was missing or buried and not accessible, the line forked near the entrance to the closest manhole and therefore could not be reached without breaking the line, or the line was crushed.

3.1.7 Disposal of Wastes

3.1.7.1 Disposal of Sewer Sediments

Sediments removed from the non-PCB-contaminated sewers during cleaning were placed in a concrete sump while awaiting disposal; sediments from the PCB-contaminated lines were placed in five 55-gallon drums. Wash waters were placed in two rental tanks, one for PCB-contaminated wash water and one for non-PCB-contaminated wash water.

On July 13, 1995, Philip Environmental collected composite samples of the sediments aggregated by Ventilation Power in the concrete sump for waste characterization profiling. Philip tested the sediments for routine disposal parameters including PCBs (EPA Method 8081), total copper (EPA Method 6010), TCLP metals (EPA Methods 1311 and 6010), and F-listed solvents (EPA Method 8260). Table 6 lists the constituents detected in the composite sediment sample.

Because concentrations of copper (a known fish toxicant) were fairly high in the Philip sewer sediment data, RPI decided to analyze the sludge using the Washington State Dangerous Waste fish bioassay procedure [WAC 173-303-100(5)]. On August 16, 1995, RPI collected the sample for the fish bioassay with a long-handled polyethylene dipper from the midpoint of the sump. Fish survival rates were 17 out of 30 in the 1,000-mg/L sediment dilution and 30 out of 30 in the 100-mg/L sediment dilution. Based on these results, the sewer sediments were disposed of as a Washington State Dangerous Waste, WT02. Because of changes in the Washington State regulations (WAC 173-303) effective November 15, 1995, this waste is no longer considered a dangerous waste.

AETS sampled sediments in the concrete sump on September 21, 1995, to profile the waste for disposal. Waste Management approved the profile (BR2492) on September 28. These sewer sediments were solidified by mixing with fly ash and transferred to two roll-off boxes by AETS; the concrete sump was cleaned, and the resulting wash water was placed in the rental tank containing non-PCB-contaminated wash water. The first roll-off box was filled during September and was sampled on September 22. The

sample was analyzed for free liquids; none were present. On October 2, the waste load was approved for disposal by Waste Management. Approximately 12 tons of solidified sediments was taken offsite on October 2 under manifest number 95355 for disposal at Waste Management's Arlington, Oregon, Subtitle C landfill. The second roll-off box was only partially full and was kept onsite to receive sediments from the cleaning of outfalls 3 and 4, the round sediment sump, the rectangular tank, and the round process sump. This second box was sampled on October 18. The sample was analyzed for free liquids; none were present. On October 24, the waste load was approved for disposal by Waste Management. The box contained 9 tons of solidified sediments when it was shipped offsite on October 27 under manifest number 95366 for disposal at Waste Management's Arlington, Oregon, landfill. Copies of the manifests, certificates of disposal/destruction, and profiles are found in Appendix B.

The five drums of PCB-contaminated sewer sediments were sampled on October 20, 1995; 500 mg/kg of Aroclor 1254 was detected. Waste Management approved the waste profile (BR2294) on October 23. The drums were removed from the site by AETS on October 30, 1995, and were shipped under manifest number 95381 to Waste Management's Henderson, Colorado, facility pending incineration at the Rollins APTUS facility in Aragonite, Utah. The material was incinerated on August 23 and 24, 1996.

Two drums of sludge from cleaning outfall 4 were solidified by CEcon personnel and transferred to a roll-off box. Also contained in this box were decontamination byproducts generated during tank cleanouts described later and soil from the remediation described in Section 2.2. This manifested load 00015, Profile BP2464, was shipped on March 6, 1996, to Waste Management's Subtitle C landfill in Arlington, Oregon.

3.1.7.2 Disposal of Sewer Wash Water

Approximately 3,500 gallons of wash water from the PCB-contaminated lines and outfall 2 was produced; this water was placed in a 20,000-gallon rental tank. Approximately 19,000 gallons of wash water from cleaning the process sewer lines was also produced; this water was placed in a separate 20,000-gallon rental tank. An additional 1,500 gallons of wash water was produced while cleaning the round sediment sump, the rectangular tank, and the round process sump. Because there was insufficient space left in the rental tank containing non-PCB-contaminated water, this water was placed in the tank containing PCB-contaminated water. A third 20,000-gallon rental tank was eventually brought on site for containing filtrate.

A black fluid was found in the discharge end of outfall 4 when it was cleaned on September 21, 1995. Because of this fluid, the wash water from outfall 4 (approximately 1000 gallons) was not placed with the other wash waters in either of the rental tanks but was placed in an existing aluminum tank.

During the first half of November 1995, the 5,000 gallons of PCB-contaminated wash water in the rental tank was filtered through a 5-micron filter and then through two activated carbon drums in series, in order to remove the PCB and copper

contamination. The filtrate was sampled and analyzed for Metro discharge parameters. The filtrate sample contained 840 µg/l PCBs (Aroclor 1254) and 21 mg/l copper, above the Metro permit discharge limit of 8 mg/l copper (Metro calculates the PCB limit separately each time a discharge is requested). The filtrate was re-filtered twice more, and in early January a filtrate was produced that was clean enough (270 µg/l PCBs and 7.9 mg/l copper) to be discharged to Metro. The discharge occurred on January 12 and 13, 1996.

Nineteen thousand gallons of non-PCB-contaminated wash water in one of the rental tanks had elevated levels of copper (28mg/l). The solids in this wash water were allowed to settle, and another sample was collected on March 6, 1996. The copper concentration of six samples ranged between 6.0 and 6.7 mg/l, below the Metro discharge limit. This water was discharged to Metro on March 20, 25, 26, and 31, 1996.

As each of the three rental tanks was emptied of water, the sludge was placed in drums and the tank was cleaned and wipe-tested for the presence of PCBs before being removed from the site. Removal of the tanks occurred on January 22, January 31, and April 16, 1996.

3.1.7.3 Disposal of Decontamination Byproducts

Sludge and rinsate from cleaning the rental tanks were placed in drums. The rinsate plus the water that accumulated at the tops of the drums of sludge were transferred to a 500-gallon mobile tank and filtered through one-micron filters and two drums of activated carbon arranged in series. This filtration continued until the PCB and copper contents were reduced to levels suitable for discharge of the water to the Metro sewer. These batch discharges occurred from March 17 to September 23, 1996.

Nine of the drums of sludge generated during cleaning of the non-PCB-contaminated tanks were mixed by CEcon personnel with fly ash to eliminate free liquids and sent off site on March 6, 1996, as part of manifested load 00015, Profile BP2464, to Waste Management's Subtitle C landfill in Arlington, Oregon. Also included in this bulk shipment were two drums of sludge from cleaning outfall 4 and soil from the remediation described in Section 2.2.

On August 23, 1996, five drums of sludge generated during cleaning of the PCB-contaminated rental tank were solidified and shipped to Waste Management's landfill as manifested load 00016, Profile BP2464. Previous testing in March indicated a PCB content of 5 mg/kg. Also included in this load were five remaining drums of sludge from the non-PCB-contaminated rental tanks and two drums of used filters. This load was shipped in bulk in a roll-off box.

A total of three drums of activated carbon was used for filtering wastewater that was generated. The material was assigned profile number BR2293. On October 30, 1995, the first drum was shipped by AETS (manifest number 95381) to Waste Management's Henderson, Colorado, facility, where it was stored until it could be incinerated at Rollins' APTUS facility in Aragonite, Utah. Incineration occurred on May 25, 1998. The final two drums of used carbon were shipped offsite by AETS on March 30, 1998 (manifest 30398). The material will be incinerated at Waste Management's Port Arthur facility.

Also picked up by AETS on March 30, 1998, were two remaining drums of used fiber filters and sludge. These were taken to Waste Management's Subtitle C landfill in Arlington, Oregon. The manifest and profile numbers were 30398 and BP 2464, respectively.

3.2 Cleaning and Disposal of Oil/Water Separator

In August 1996, an above-ground oil/water separator was cleaned and demolished by CEcon Corporation. This component of the site's Metro sewer system was used from 1976 until mid-1995, when it was no longer required by Metro for treatment of the site's waste water.

Cleaning involved removal of a water layer and an upper and lower sludge layer. The water was removed in three stages. Each portion was transferred to a mobile holding tank, recirculated through one-micron filters, analyzed for copper, and discharged to Metro. Five hundred gallons (0.092 mg/l copper) was discharged on August 14, 500 gallons (0.048 mg/l copper) on August 16, and 500 gallons (0.041 mg/l copper) on August 18.

During the week of August 19, CEcon solidified the sludge, in situ, by mixing it with fly ash using a Bobcat loader equipped with a backhoe. The solidified sludge was placed in a roll-off box and picked up by Diablo Transportation on August 23 for shipment to Waste Management's Subtitle C landfill in Arlington, Oregon. The manifest and profile numbers were 00016 and BP2464, respectively. This load, which also contained sediment from cleaning a stormwater tank (see following section) and decontamination byproducts from sewer cleaning, weighed 31,480 pounds. Peiser Laboratories' data indicate that two samples of this oil/water separator sludge contained 1290 and 2150 mg/kg copper and less than 5 mg/kg PCBs.

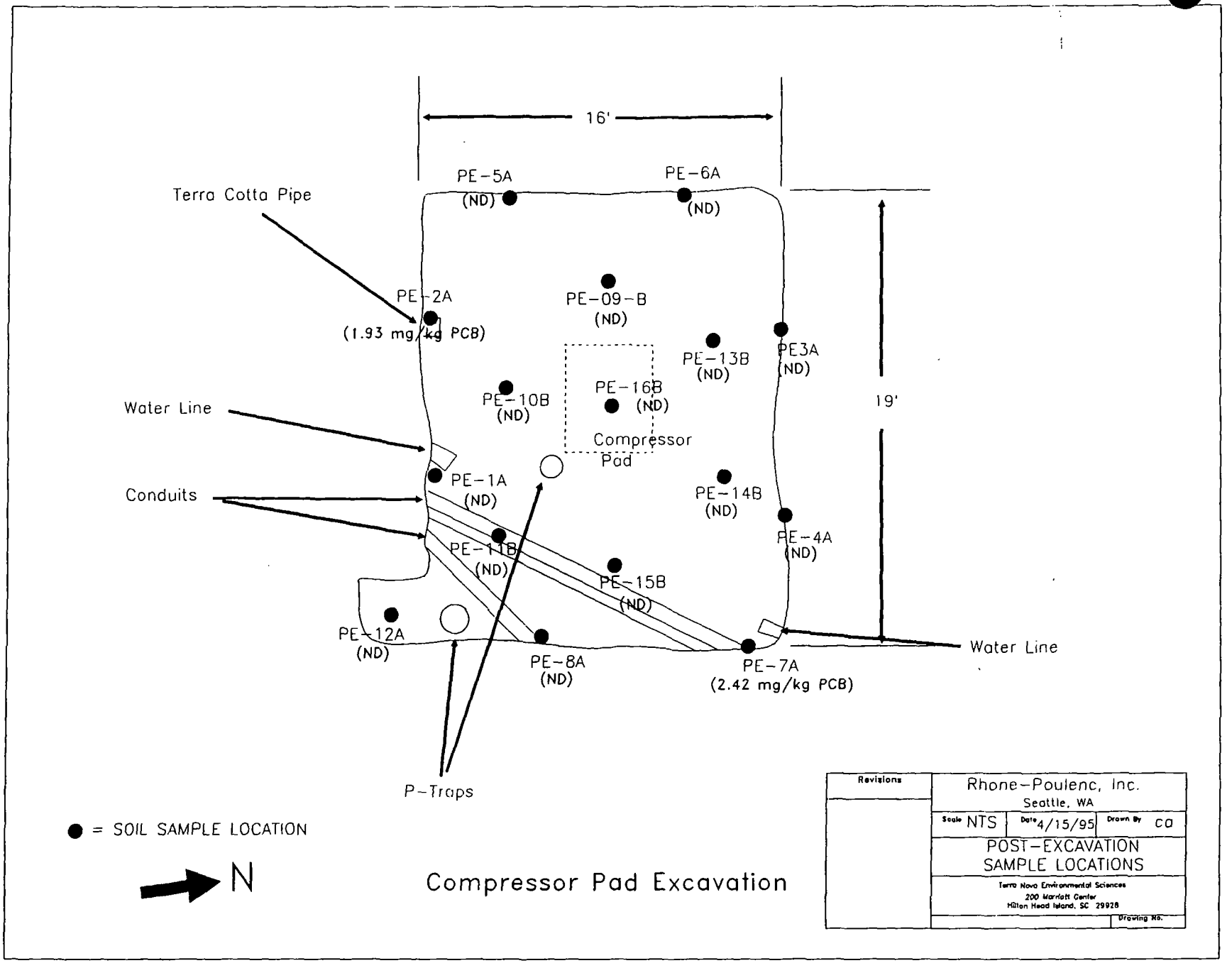
During removal of the sludge from the separator, an additional 100 gallons of water was encountered. This water was removed using a vacuum truck, that was already partially filled with water from previously cleaning a stormwater tank, and transferred to drums. Fifty gallons of water, used for decontamination of equipment, was also transferred to drums. The water was transferred from the drums to a mobile holding tank in late 1997, recirculated through one-micron filters, analyzed for copper and PCBs, and discharged to Metro on September 17, 1997. The analytical results were as follows: 0.087 mg/l copper and 0.19 µg/l Aroclor 1254.

The walls of the empty separator were scraped and wire-brushed to remove adhering residue. The fiberglass and wood vessel was sawed into pieces and placed in a roll-off box. On August 27, 1996, this waste was taken by Waste Management to their Seattle transfer station prior to disposal at their Subtitle D, Columbia Ridge Landfill at Arlington, Oregon. This load weighed 6,480 pounds.

3.3 Cleaning of Stormwater Tank

On August 19 and 20, a tank that had been used to store stormwater prior to its discharge to Metro, was cleaned by CEcon. This tank is an open-top, 800,000-gallon, steel vessel. The sediment was shoveled into drums. The portion of the drummed sediment that was wet was mixed with fly ash and placed in a roll-off box, along with the dry sediment from the drums. This solidified material was picked up by Diablo Transportation on August 23 for shipment to Waste Management's Subtitle C landfill in Arlington, Oregon. The manifest and profile numbers were 00016 and BP2464, respectively. The entire inner surface of the tank was pressure washed, generating approximately 400 gallons of wash water. This water was removed by a vacuum truck, One hundred gallons of water from the oil/water separator cleaning was added to this 400 gallons, and the total volume was transferred to drums. Also added to drums was 50 gallons of water used for decontaminating equipment following the oil/water separator and stormwater tank cleaning. The water in the drums was transferred to a mobile holding tank, recirculated through one-micron filters, analyzed for copper and PCBs, and discharged to Metro on September 17, 1997.

FIGURES



F-1

Figure 1
Compressor Pad Excavation

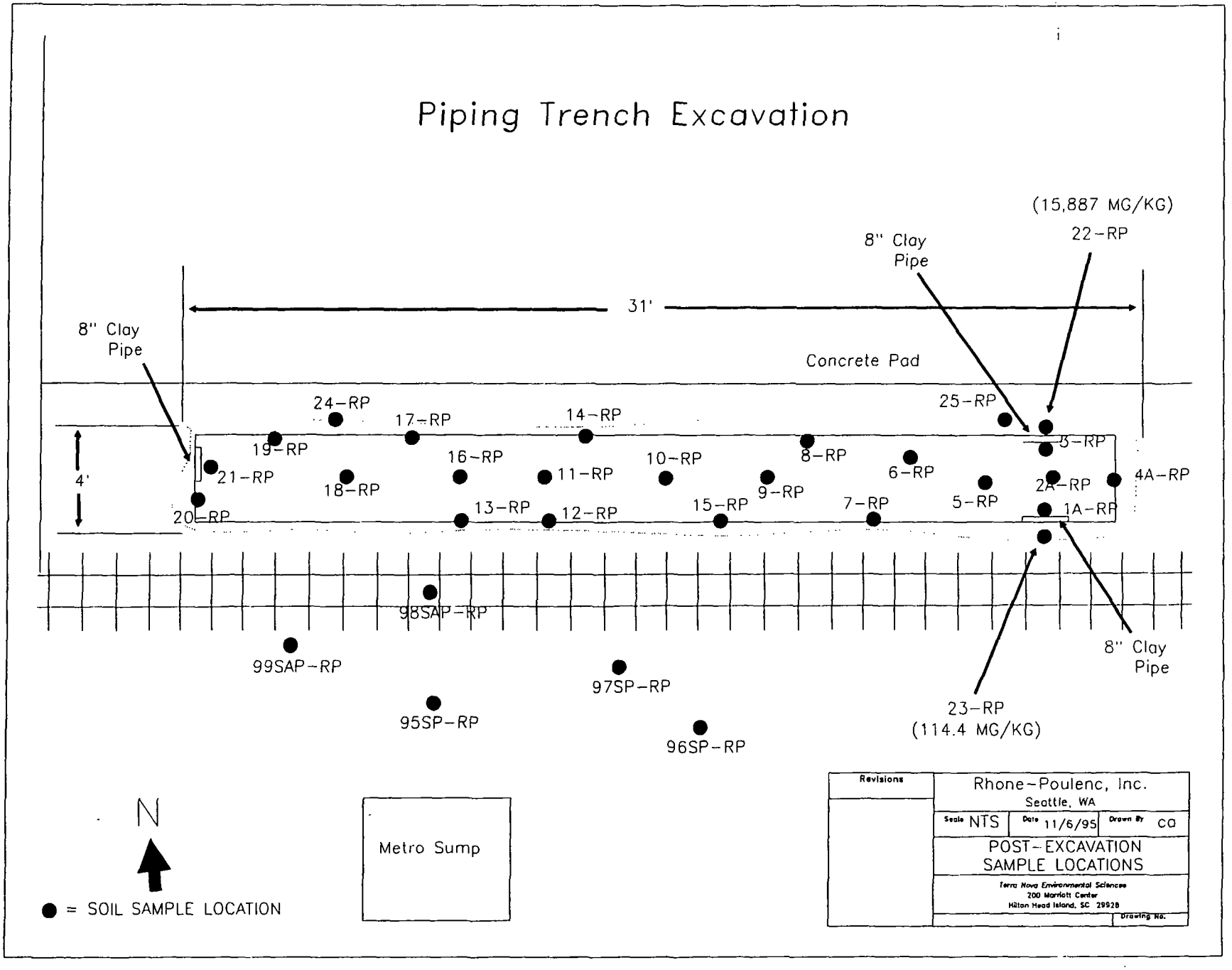


Figure 2
Piping Trench Excavation and Sample Locations

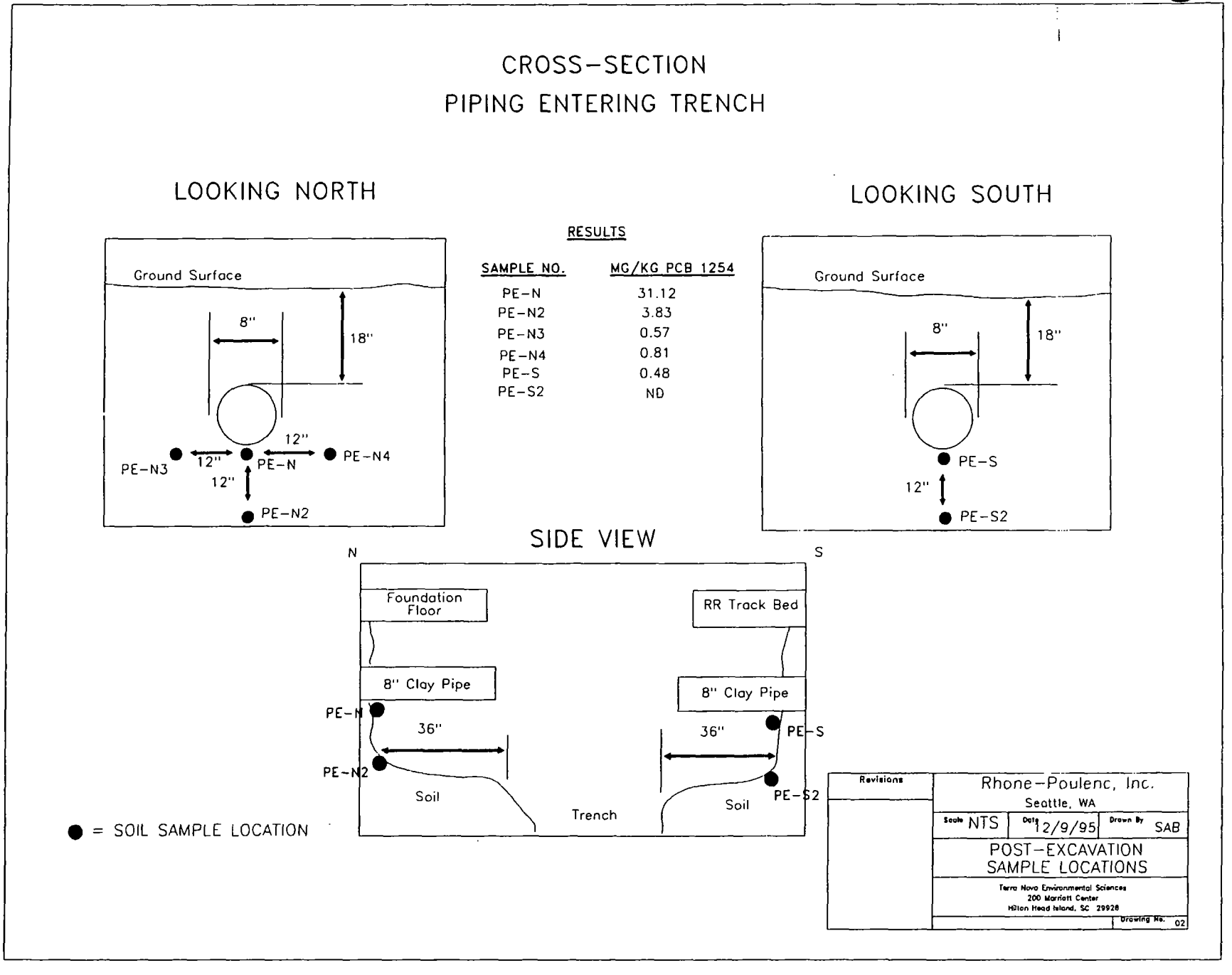


Figure 3
Pipe and Sample Locations in Piping Trench

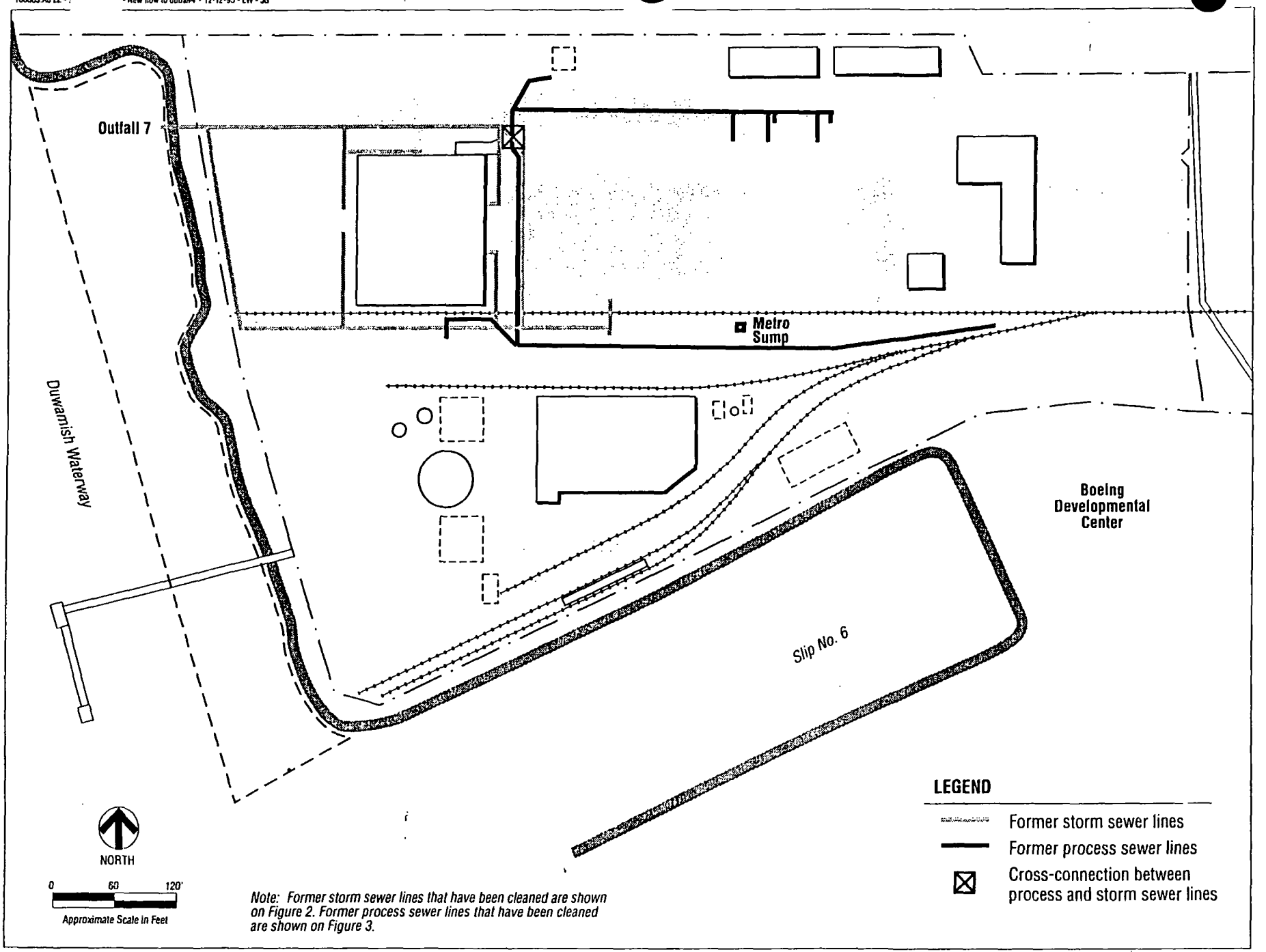
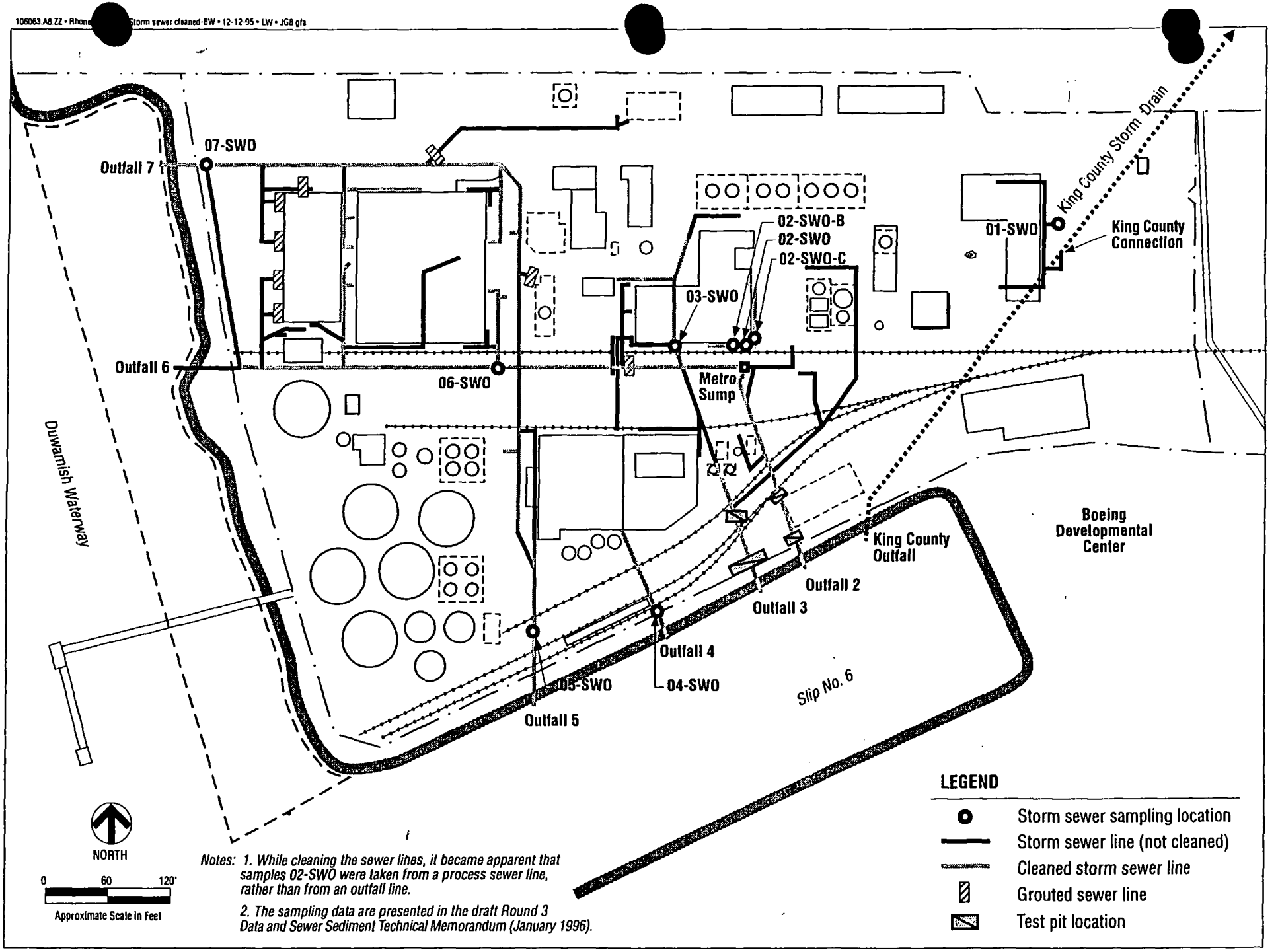


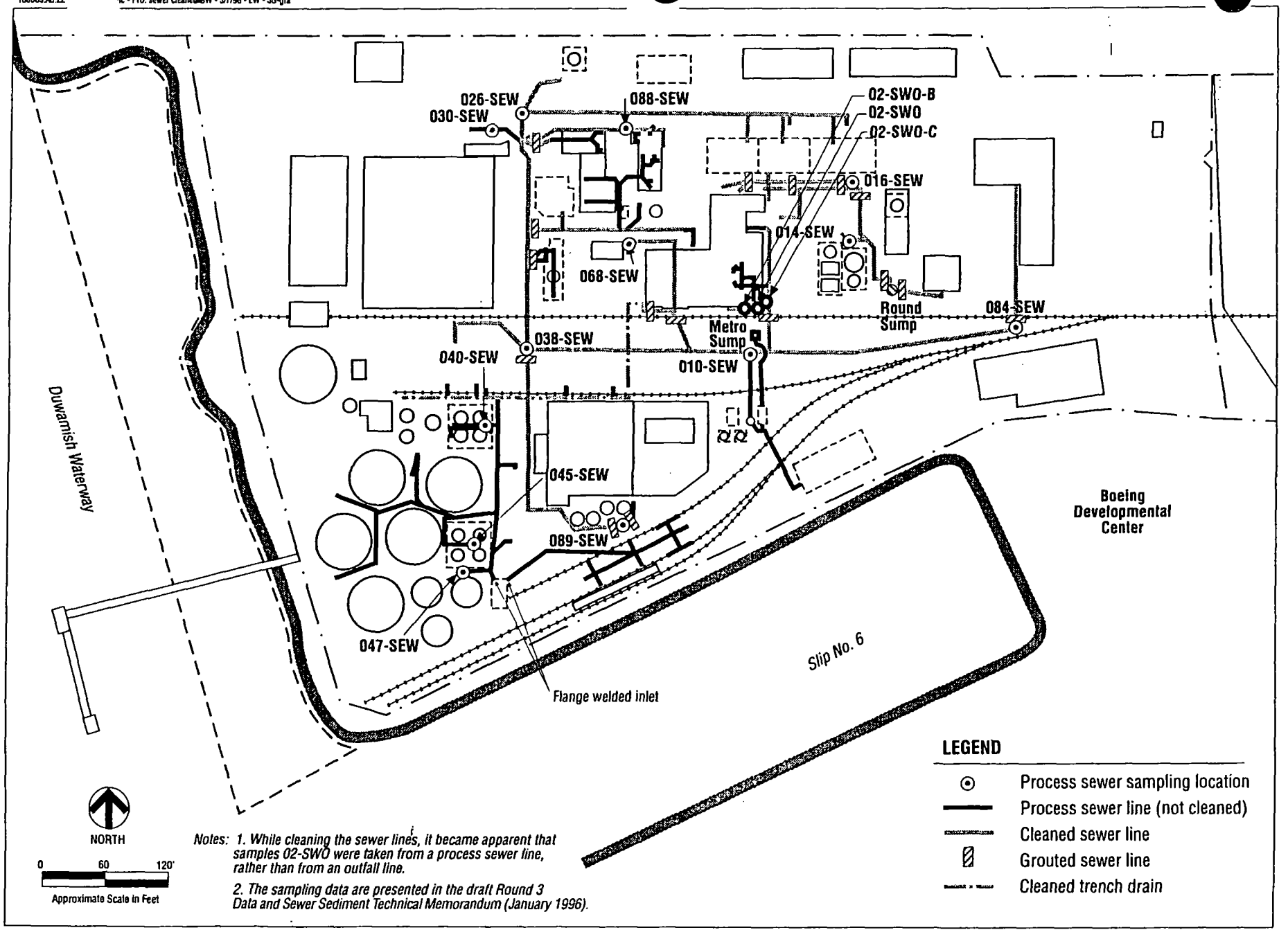
Figure 4
New Flow to Outfall 7



Notes: 1. While cleaning the sewer lines, it became apparent that samples 02-SWO were taken from a process sewer line, rather than from an outfall line.

2. The sampling data are presented in the draft Round 3 Data and Sewer Sediment Technical Memorandum (January 1996).

Figure 5
Locations of Storm Sewer Lines Cleaned



Notes: 1. While cleaning the sewer lines, it became apparent that samples 02-SWO were taken from a process sewer line, rather than from an outfall line.

2. The sampling data are presented in the draft Round 3 Data and Sewer Sediment Technical Memorandum (January 1996).

Figure 6
Locations of Process Sewer Lines Cleaned

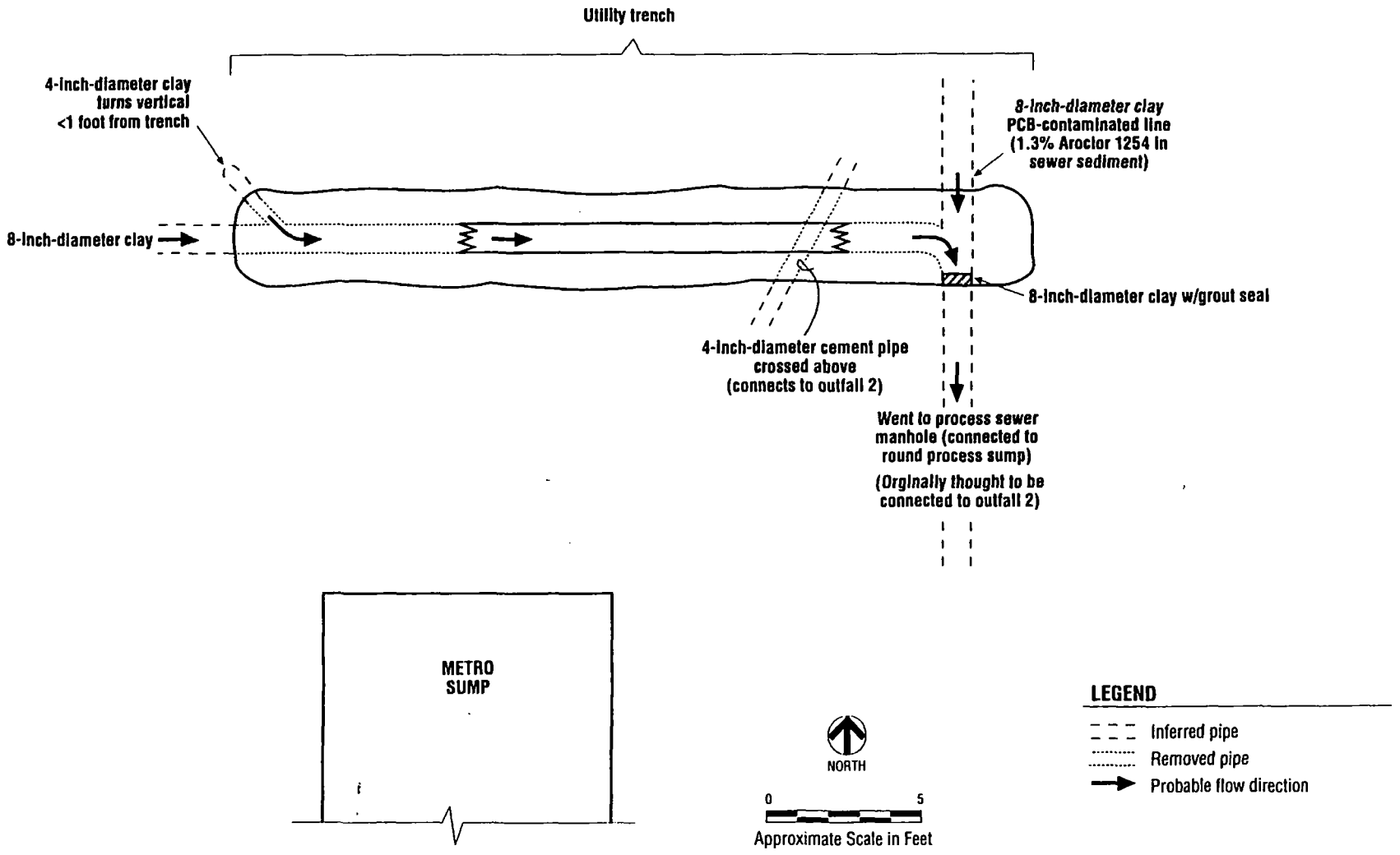


Figure 7
Detail of PCB-Contamined Line

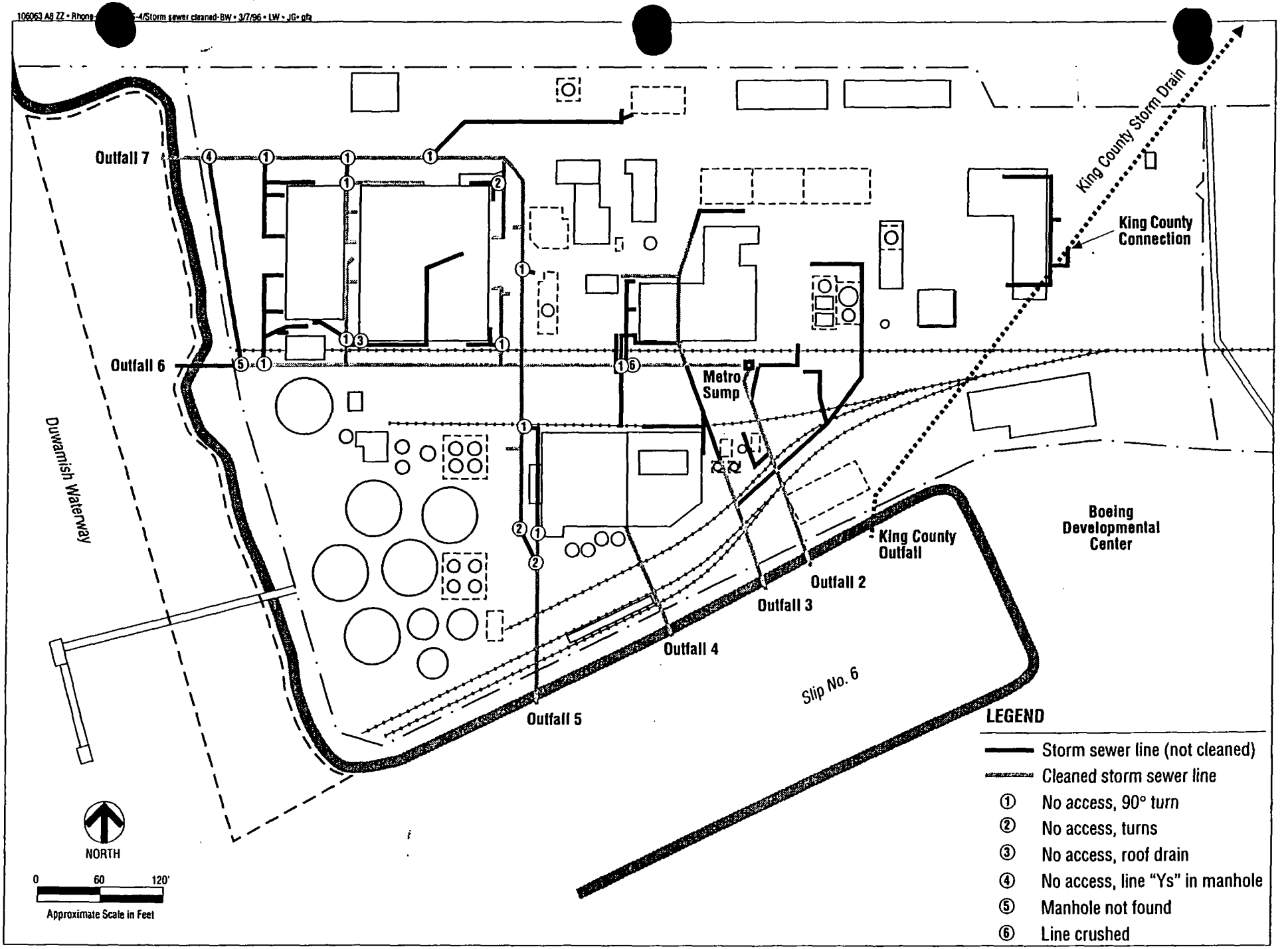


Figure 6
Reasons for Not Cleaning Storm Sewer Lines

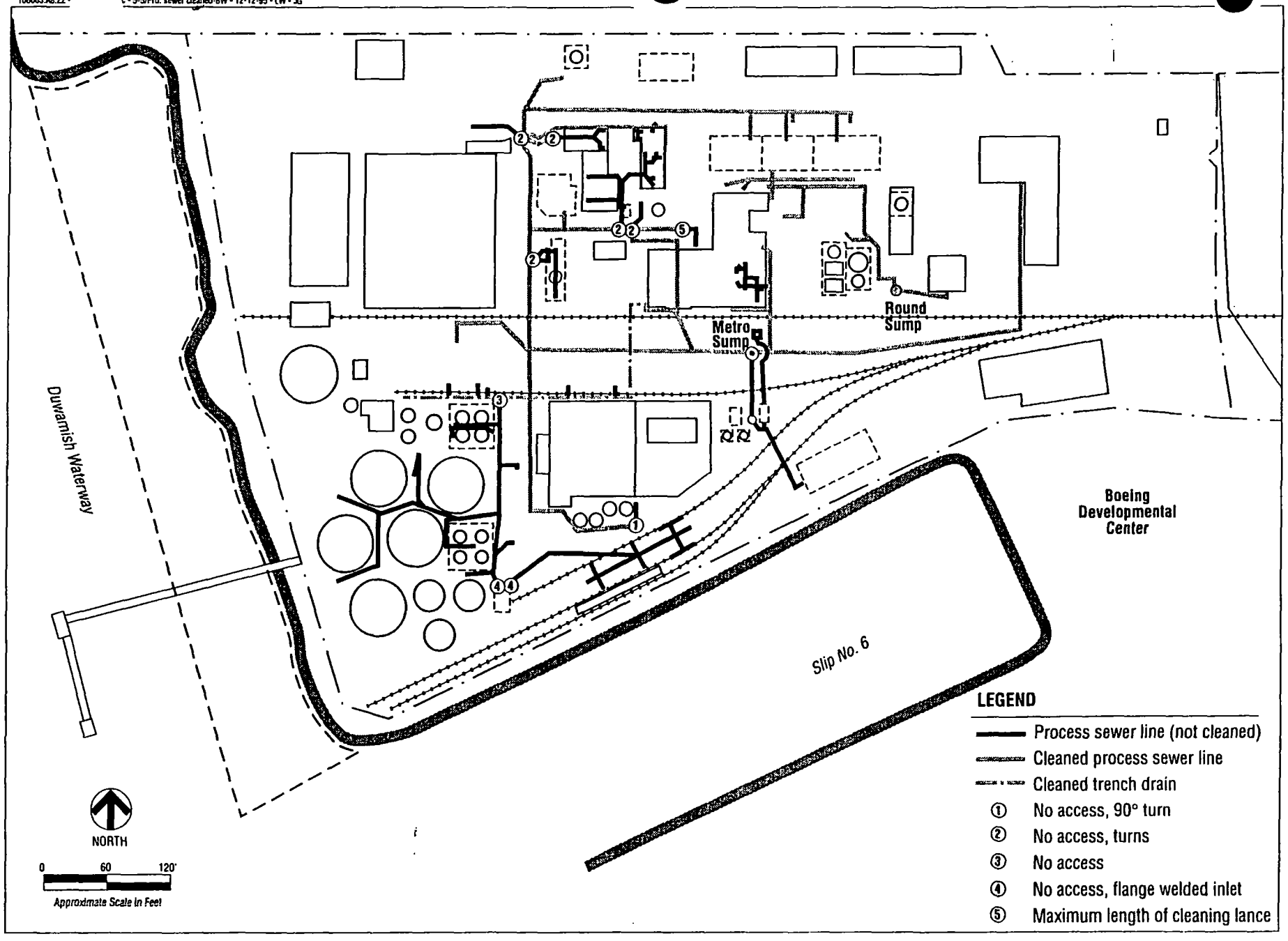


Figure 9
Reasons for Not Cleaning Process Sewer Lines

TABLES

Table 1

Summary of Confirmatory Analytical Results, Compressor Pad Remediation 3/27/95 - 3/29/95

Sample No.	Date Sample Collection	Results mg/kg of Aroclor 1254	USEPA/TSCA Cleanup Level mg/kg
PE-1A	3/28/95	ND	10
PE-2A	3/28/95	1.93	10
PE-3A	3/28/95	ND	10
PE-4A	3/28/95	ND	10
PE-5A	3/28/95	ND	10
PE-6A	3/28/95	ND	10
PE-7A	3/28/95	2.42	10
PE-8A	3/28/95	ND	10
PE-09B	3/29/95	ND	10
PE-10B	3/29/95	ND	10
PE-11B	3/29/95	ND	10
PE-12A	3/28/95	ND	10
PE-13B	3/29/95	ND	10
PE-14B	3/29/95	ND	10
PE-15B	3/29/95	ND	10
PE-16B	3/29/95	ND	10

Table 2

Summary of Confirmatory Analytical Results, Piping Trench Soil Remediation 11/2/95 - 11/4/95

Sample No.	Date Sample Collection	Results mg/kg of Aroclor 1254	USEPA/TSCA Cleanup Level mg/kg
1A-RP	11/4/95	2.483	10
2A-RP	11/3/95	0.031	10
3-RP	11/2/95	4.904	10
4A-RP	11/4/95	0.282	10
5-RP	11/2/95	9.573	10
6-RP	11/2/95	0.943	10
7-RP	11/2/95	1.218	10
8-RP	11/2/95	1.177	10
9-RP	11/2/95	2.772	10
10-RP	11/2/95	1.306	10
11-RP	11/2/95	2.931	10
12-RP	11/2/95	1.358	10
13-RP	11/2/95	1.979	10
14-RP	11/2/95	4.042	10
15-RP	11/2/95	1.223	10
16-RP	11/2/95	4.904	10
17-RP	11/2/95	0.977	10
18A-RP	11/3/95	ND	10
19A-RP	11/3/95	2.408	10
20-RP	11/2/95	0.254	10
21-RP	11/2/95	1.228	10
22-RP	11/2/95	**1,588.71**	10
23-RP	11/2/95	**114.45**	10
24-RP	11/3/95	4.885	10
25-RP	11/3/95	0.476	10
95SP-RP	11/2/95	2.612	10
96SP-RP	11/2/95	5.691	10
97SP-RP	11/2/95	1.364	10
98SAP-RP	11/3/95	0.866*	10
99SAP-RP	11/3/95	2.830	10

* NOTE: The above result was based on wet weight, not dry weight, due to insufficient sample volume. Actual dry weight value would be somewhat higher.

Table 3

Summary of Confirmatory Analytical Results, Piping Trench Soil Remediation 11/29/95 - 11/30/95

Sample No.	Date Sample Collection	Results mg/kg of Aroclor 1254	USEPA/TSCA Cleanup Level mg/kg
PE-N	11/30/95	31.12	10
PE-N2	11/30/95	3.83	10
PE-N3	11/30/95	0.57	10
PE-N4	11/30/95	0.81	10
PE-S	11/30/95	0.48	10
PE-S2	11/30/95	ND	10

Table 4

Outfall 7 Rinsate and Stormwater Samples

Parameter	Rinsate Sample (9/7/95)		Storm Event Sample (10/20/95)				Calculated Maximum Daily Limit[b]	Water Quality Criteria or MTCA Method C Surface Water Concentration[c]
	Result	PQL[a]	First Flush		Composite			
			Result	PQL[a]	Result	PQL[a]		
Metals (all values in mg/l unless otherwise specified)								
Arsenic	ND	0.15	ND	0.15	ND	0.15	9.072	
Cadmium	ND	0.010	ND	0.010	ND	0.010	0.072	
Chromium	ND	0.01	ND	0.01	ND	0.01	40	
Hexavalent chromium	ND	0.01	ND	0.01	ND	0.01		0.011
Copper	1.9	0.025	0.20	0.025	0.15	0.025	0.30	
Lead	0.14	0.05	0.05	0.05	0.06	0.05	0.70	
Selenium	ND	0.15	ND	0.20	ND	0.20	0.504	
Silver	ND	0.01	ND	0.01	ND	0.01	--	0.005
Zinc	0.32	0.02	0.37	0.02	ND	0.02	--	0.0525
Mercury	0.0056	0.0002	0.0003	0.0002	0.0002	0.002	0.0030	
Semivolatile Organics[d] (µg/l)								
Phenanthrene	ND	5.9	6J	9.4	ND	9.5	--	NA
Fluoranthene	51	5.9	17	9.4	13	9.5	5,700	
Pyrene	36	5.9	19	9.4	13	9.5	163,000	
Benzo(a)anthracene	23	5.9	ND	9.4	ND	9.5	19	
Chrysene	26	5.9	13	9.4	9.2J	9.5	19	
Bis(2-ethylhexyl)phthalate[e]	20B1	5.9	14B1	9.4	12B1	9.5	2,200	
Benzo(b)fluoranthene	20	5.9	ND	9.4	ND	9.5	19	
Benzo(k)fluoranthene	ND	5.9	11	9.4	12	9.5	19	
Benzo(a)pyrene	12	5.9	7.2J	9.4	5.6J	9.5	19	
Indeno(1,2,3-cd)pyrene	11	5.9	6.9J	9.4	6.6J	9.5	19	
Benzo(g,h,i)perylene	10	5.9	6J	9.4	6J	9.5	--	NA

Table 4 (Continued)

Outfall 7 Rinsate and Stormwater Samples

Parameter	Rinsate Sample (9/7/95)		Storm Event Sample (10/20/95)				Calculated Maximum Daily Limit[b]	Water Quality Criteria or MTCA Method C Surface Water Concentration[c]
	Result	PQL[a]	First Flush		Composite			
			Result	PQL[a]	Result	PQL[a]		
Pesticides and PCBs[f] (µg/l)								
Arochlor 1254	1.3	0.51	ND	0.51	ND	0.52	3.53[g]	
Aldrin	ND	0.01	0.062	0.01	0.039	0.01	0.48	
4,4'-DDE	0.021	0.02	ND	0.02	ND	0.021	0.25[h]	
DDT	ND	0.02	0.067	0.02	ND	0.021	0.25[h]	
Heptachlor epoxide	ND	0.01	0.028	0.01	ND	0.01	0.96[i]	
Lindane	ND	0.01	0.023	0.01	ND	0.01	20	
General Chemistry								
Oil and Grease	ND	5 mg/l	9 mg/l	5 mg/l	--		15 mg/l	
Hardness (as $CaCO_3$)[j]	50 mg/l	2 mg/l	27 mg/l		26 mg/l		NA	NA
pH	7.70	NA	7.50		7.31		6.5 - 8.5	

ND = Not detected.
-- = Limit not calculated or no water quality criteria available or calculated.
NA = Not applicable.
B1 = Value not significantly different than that found in the method blank.
J = Positively identified, but value is an estimated quantity.
No BTEX were detected (PQLs were 5 µg/l).
[a] PQL = Practical quantitation limit.
[b] Calculated maximum daily limit assuming a 4.5-acre impervious surface, developed by S. Hays/Hays Consulting based on information provided by P. Elardo/Ecology.
[c] Water Quality Criteria (WAC 173-201A) or Model Toxics Control Act (MTCA) Method C for Surface Water (WAC 173-340) (MTCA is used only for semivolatile organics). Used for comparison only when allowable discharge concentrations were not available. Note that some of the Water Quality Criteria are below PQLs.
[d] Semivolatile organic were analyzed using EPA Method 8270. All other semivolatile organics were not detected.
[e] Note that bis(2-ethylhexyl)phthalate was found in the method blank at 0.85 ì g/l.
[f] Pesticides and PCBs were analyzed using EPA Method 8080. All other pesticides and PCBs were not detected.
[g] Maximum daily limit is calculated for total PCBs.
[h] Maximum daily limit is calculated for DDT and metabolites.
[i] Maximum daily limit is based on federal criterion which is identical for heptachlor and heptachlor epoxide.
[j] Hardness is used for metals criteria calculations.

Table 5

Outfall 7 Stormwater Sampling Chronology

Date	Action
July/August 1995	Storm and process sewers to be connected to outfall 7 are pressure-washed.
9/1-9/6	Newly cross-connected storm sewer to outfall 7 is rinsed twice.
9/7	Sample is taken from third rinse.
9/16	Newly cross-connected storm sewer to outfall 7 is pressure-washed a second time.
10/17	Storm event floods outfall 7 system. Stormwater is pumped to Metro.
10/20	Water from storm event is sampled.
10/26	Approval for stormwater discharge to Duwamish Waterway is received from Ecology.
10/27	Stormwater discharge to Duwamish Waterway through outfall 7 begins.

Table 6

Detected Constituents in Composite Sewer Sediment Sample[a]

Parameter	Results
Total copper	6,300 mg/kg
TCLP barium[b]	1.4 mg/l
TCLP cadmium[b]	0.035 mg/l
Arochlor 1254	6.6 mg/kg
Acetone	4,100 µg/l
Toluene	700 µg/l
M-xylene	310 µg/l
P-xylene	310 µg/l
O-xylene	500 µg/l

[a]Sample collected by Philip Environmental on 7/13/95.
[b]No other TCLP metals were detected.

APPENDICES

NOTES OF SUE HAYS REGARDING PCB REMEDIATION

APPENDIX A

NOTES OF SUE HAYS REGARDING RHONE-POULENC PCB COMPRESSOR PAD REMEDIATION PROJECT

Objective

To remove and dispose of all PCB-contaminated concrete, soil and piping in the vicinity of the Autoclave Compressor Pad in Area N2. The cleanup level to be used is 10 ppm PCBs.

Remediation Contractor

CEcon Corporation
1703 Portland Avenue
Tacoma WA 98421

Telephone: (206) 272-8851
Fax: (206) 272-1334

Project Manager: W. D. (Pinky) Carll

Log of Activities and Notes

March 27, 1995

- The six inch thick surface concrete surrounding the compressor pad was broken up and placed on a 60-mil poly tarp located south of the excavation site.
- The concrete was removed to expose an area of ground about 21' by 16'. Dirt was then removed around the pad to expose a 10' by 12' footing. More dirt was removed around the footing. It could be seen to be about 2 or 2.5' thick.
- The compressor pad measured approximately 4'x 5' by 3' thick.
- The excavated dirt was placed on a tarp located at the northwest corner of the excavation.
- As soon as the concrete was removed from on top of the soil, water began to slowly run from near the top of the soil into the hole. As the hole was dug deeper, water entered from various depths and sides of the excavation.
- The accumulated water was pumped to a rented tank (20,000 gal.). Rented from "Rain for Rent".
- Water which drained from the dirt piled on the tarp partially drained into the excavation before being pumped to the tank and partially accumulated on the tarp before being pumped to the tank. All water was ultimately accumulated in the tank.
- Concrete pieces from the pad and the surface were placed at the east side of the "concrete" tarp. Pieces from the footing were placed at the west side.

- Terra Nova sampled soil at perimeter of excavation, near the top. All tested OK using Immunoassay kit (ENSYS Inc. Environmental Products). This provides a rapid screening test for PCBs at 2 and 8 ppm.
- Terra Nova then took 4 samples near base of footing. The one at the east side was less than 2 ppm, the N,S, and W ones were higher than 8 ppm.

- Dirt was cleaned from the top of the footing while it was still in place and 4 samples of the concrete were taken from the top of the footing near the four sides of the pad. These were composited.
- CEcon had a subcontractor operating some of the equipment: Ronald E. Wicks of Ron's Earthworks.

March 28, 1995

- Pumped accumulated water out of hole and into tank.
- Work began on breaking concrete pad. Sent for a larger rig, and continued until pad and footing were broken up and placed on plastic tarp.
- Terra Nova sampled both the upper and lower surfaces of the concrete footing (in pieces at this point).
- All piles were covered with tarps in case of rain. Weather all week from 3/27 to 3/31 was dry.

March 31, 1995

- Concrete surface slab and compressor pad debris, plus approximately one half of the soil were loaded into trucks for hauling to APTUS, Inc. for incineration in Utah.
- Hauler: Wills Trucking, Inc. (EPA# OHD068913409). I was given a copy of their Certification of Insurance.
- The trucks all looked exceptionally clean and well cared for. The drivers seemed very conscientious. The insurance certificate was a general one and did not list truck numbers.
- The trucks were all lined and covered. The placards read: 3077-9, which is correct according to APTUS. All manifests were in order and marked with the truck number. All trucks had PCB stickers on them. A copy of each manifest was left with me. I called to insure that each truck arrived at the APTUS site. I received copies of the weigh tickets via CEcon Corp.

Manifest #	Truck #	Weight (lb.)	
00001	119	46,540	Rec'd facility copy of
00002	97	41,740	manifest back from
00003	99	42,360	APTUS 4/4/95 (fax)
00004	130	42,760	

April 4, 1995

- Two more trucks went to APTUS (dirt)

Manifest #	Truck #	Weight (lb.)
00005	97	40,380
00006	121	43,880

- The iron pipe was broken into small pieces and sent to APTUS with above material.
- CEcon filled hole with 1) surface soil from filled area west of RCRA storage site and 2) sand fill from former cooling tower area. The dirt and sand were well tamped as they were put into the hole.

April 6, 1995

- Last truck left for APTUS (concrete).

Manifest #	Truck #	Weight (lb.)
00007	98	32,900

- Added some pink-colored concrete from elsewhere on the site to this load.
- Total weight of all 7 loads: 290,560 pounds.

April 7, 1995

- Met with Carol Kralik, an account manager from Chemical Waste Management, to make out the profile sheet for the concrete footing debris (<50 ppm PCBs) to go to Arlington, Oregon, to their hazardous waste landfill.
- I received the photographs of the job from CEcon.

April 10, 1995

- CEcon brought in a second tank to use for filtration of the PCB-contaminated water.
- A mixed sample of the water analyzed:
  - 420 ppb PCB (Aroclor 1254)
  - 0.0021 ppm toluene

1.9 ppm copper
0.06 ppm chromium

- This analysis was done by Sound Analytical Services, Inc. in Tacoma. WA.

April 11, 1995

- CEcon set up 2 50-micron filters in parallel and began filtration of the water. It is a slow process.
- The filtrate was gray/brown and cloudy.
- Filtration and sampling continued through the week. The water has to get down to 5 ppb before it can be discharged to Metro. They tried lower porosity filters also.

April 14, 1995

- Received approval for disposal of concrete footing at CWM in Arlington, OR. CEcon will arrange for a truck to haul it by Wednesday, April 19, 1995.

April 18, 1995

- Received completed copy of CWM-approved profile for PCB-contaminated concrete from CEcon. Also, received a copy of CWM's price schedule for transportation, disposal, etc. Profile # BR 3421.

April 19, 1995

- CEcon sent a copy of the most recent lab data on the filtrate of a portion of the PCB water from the remediation project. PCB - 140 ug/l (ppb), Cu - 1.3 ppm
- Sound Analytical filtered a portion of this water through a 0.45-micron filter in the lab and obtained 16 ppb PCB.

April 20, 1995

- Concrete from the footing was picked up for transport to Arlington, OR, landfill - CWM Profile # BR 3421.
- Transporter: Jack Gray Transport, Inc.
  Truck # 1827, Placarded: 9, UN 3077
- Manifest # 00008, Weight: 25,420 lb.
- Total weight of dirt and concrete: 315,979 lb.

April 27, 1995

- APTUS returned facility-signed copies of manifests, 00001-00006.
- They sent Certificates of Disposal for:
  Manifest # 00003 - destroyed as of 4/4/95
  Manifest # 00004 - destroyed as of 4/9/95
- I called and all loads except the final one sent (00007) have been incinerated. All of the paperwork will eventually be sent to us.
- Work is continuing on finding a satisfactory way of filtering out the PCBs from the water.
- Activated carbon and a combination of activated carbon and a polymer (Petro LOK) are being investigated. Three gallons of the water were sent out to Advanced Water Systems, Inc., for a trial run using the carbon polymer. CEcon has contacted Calgon for information on carbon filtration.

June 6, 1995

- As of this date, all Certificates of Destruction have been received. (They were received much earlier than this date.)
  Manifest # 00001 - destroyed as of 4/3/95
  Manifest # 00002 - destroyed as of 4/3/95
  Manifest # 00005 - destroyed as of 4/8/95
  Manifest # 00006 - destroyed as of 4/8/95
  Manifest # 00007 - destroyed as of 5/19/95

- Re: Manifest # 00008 (PCB-contaminated concrete footing sent to CWM in Arlington, OR). Facility copy of manifest and Certificate of Disposal received at an earlier date. Disposed of 4/20/95.

Carbon Filtration and Disposal of PCB-containing Water

June 9, 1995
- CEcon began filtration of water through a 5-micron filter and a 165-lb. drum of activated carbon.

"Calgon Flowsorb®"
Activated Carbon
CAS#7440-44-0
Calgon Carbon Corp.
P.O. Box 717
Pittsburgh, PA 15230 (412) 787-6700

- Flow Rate = 10 gpm

June 10, 1995
- Filtration completed

June 12, 1995
- Filtered water sampled

June 14, 1995
- CEcon received results from Sound Analytical Services, Inc.
  240 ppb PCB

June 28, 1995
- Water refiltered using two drums of Calgon Activated Carbon

July 1, 1995
- Filtration completed

July 6, 1995
- Filtered water sampled

July 10, 1995
- Results received from Sound Analytical Services, Inc.
  170 ppb PCB

July 17, 1995
- CEcon cleaned second Rain-for-Rent Tank (from 4/10/95)
- Sue Hays wrote letter to Metro requesting authorization to discharge water containing 170 ppb PCB.

July 19, 1995
- Metro sent letter authorizing discharge

July 21, 1995
- Wipe test samples sent to Sound Analytical

July 24, 1995
- CEcon received results: all below 10 ug/100cm^2

July 26, 1995
- Tank removed from site

- 4000 gallons of water discharged to Metro sewer over the four (4) hour period of 11:30 am to 3:30 pm by CEcon and R-P personnel.

July 27, 1995
- 2,265 gallons discharged by R-P personnel over the four (4) hour period of 12:30 pm to 4:30 pm

July 28, 1995
- Remainder of water discharged by R-P from 7:00 am to 8:00 am. CEcon personnel cleaned tank and placed wash water and residue in two (2) drums.
- CEcon took wipe samples from the Rain-for Rent tank (from 3/27/95) and sent them to Sound Analytical Services for analysis.

August 2, 1995
- CEcon sampled two (2) drums of wash water and composited into one (1) sample. A bailer was used for sampling. Samples were taken to Sound Analytical.

August 4, 1995
- Received wipe sample results. All less than $10ug/100cm^2$.

August 7, 1995
- This tank was removed from site.

August 8, 1995
- Obtained lab results for two (2) drums of wash water: 230 ppb PCB.
- Called Cynthia Wellner of Metro and obtained her approval for discharging this water to the Metro sewer.

August 9, 1995
- Discharged the two (2) drums of water.

NOTES OF SUE HAYS REGARDING RHONE-POULENC PCB TRENCH REMEDIATION OF 3/6/96

I. Removal of three (3) piles and eight (8) drums

- CEcon employees (Tracy and Jake) arrived at 8 am with backhoe
- Truck and pup (Steve Forler Trucking, Inc.) arrived at 8:30
- Loading completed at 9:30. Truck left to be weighed. Truck returned to have more dirt added to load.
- Manifest No. 00014 (60,660 lbs.)
- In addition to soil, this load contained drums of PPE and filters from warehouse (approximately 2/3 of total amount of soil was included in this first load).
- In preparation for second truck load, three (3) pallets of fly ash were brought by CEcon (Lone Star "Fly Ash Pozzolan"). Each pallet contained forty 70-lb. bags.
- CEcon employee, Jake, left and John took his place.
- Began dumping drums of soil from trench excavation at 9:45 am and mixing them with the remaining soil and fly ash.

II. Removal of above plus: 1) 9 drums of non-PCB-contaminated sludge from cleaning non-PCB contaminated "Rain-for-Rent" tank, 2) 2 drums of sediment from SWO-04 cleaning, and 3) 2 drums of well rehabilitation sediment and decontamination rinse water.

- Water from the 9 drums of sludge (plus 5 remaining drums of sludge, which were returned to the warehouse) was pumped into 4 empty drums. This sludge, along with the 2 drums of outfall 4 sediment and 2 drums of well rehabilitation material, were mixed with fly ash and soil.
- The stabilized material was loaded into a second Steve Forler truck and pup between 3:15 and 4:00 pm. This truck left the site at 4:15.
- Manifest No. 00015 (49,280 lbs.)

III. General

- All 3 pallets of fly ash were used.
- Photographs of this activity were taken.

- A telephone call on 3/7/96 verified that both truckloads had arrived at the Chemical Waste Management Subtitle C hazardous waste landfill in Arlington, OR.
- The profile for this material is BP 2464. It was approved 2/13/96.
- Certificates of Destruction were received for manifested loads 00014 and 00015.

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  Calgon Carbon Corp.
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- Began dumping drums of soil from trench excavation at 9:45 am and mixing them with the remaining soil and fly ash.

II. Removal of above plus: 1) 9 drums of non-PCB-contaminated sludge from cleaning non-PCB contaminated "Rain-for-Rent" tank, 2) 2 drums of sediment from SWO-04 cleaning, and 3) 2 drums of well rehabilitation sediment and decontamination rinse water.

- Water from the 9 drums of sludge (plus 5 remaining drums of sludge, which were returned to the warehouse) was pumped into 4 empty drums. This sludge, along with the 2 drums of outfall 4 sediment and 2 drums of well rehabilitation material, were mixed with fly ash and soil.
- The stabilized material was loaded into a second Steve Forler truck and pup between 3:15 and 4:00 pm. This truck left the site at 4:15.
- Manifest No. 00015 (49,280 lbs.)

III. General

- All 3 pallets of fly ash were used.
- Photographs of this activity were taken.

- A telephone call on 3/7/96 verified that both truckloads had arrived at the Chemical Waste Management Subtitle C hazardous waste landfill in Arlington, OR.
- The profile for this material is BP 2464. It was approved 2/13/96.
- Certificates of Destruction were received for manifested loads 00014 and 00015.

MANIFESTS, CERTIFICATES, AND PROFILES

E1342 / 950738

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: WAD009282302 | Manifest Document No.: 00001

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

GENERATOR

Generator's Name and Mailing Address
Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Wills Trucking, Inc.

6. US EPA ID Number: OHD068913409

C. State Transporter's ID

D. Transporter's Phone (801)973-9393

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
APTUS, Inc.
11600 North Aptus Road
Aragonite, Utah 84029

10. US EPA ID Number: UTD981552177

G. State Facility's ID

H. Facility's Phone (801)531-4200

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls 9; UN3077 PGIII	RQ	001	DT	20000	Kg	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
I is to certify that the hazardous material manifested to Aptus on the
APTUS Profile No.: AP149917 was designated by me/laboratory in accordance
NVT-PCB-25P CFR 264 if applicable to the above identification

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
TR No. 119
Out of Service Date: March 27, 1995
Emergency Phone NO.: (800)323-0869

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
THERON B RAHIER	Theron B Rahier	03	31	95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Mark Williams		03	31	95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
13a) Actual Weight Received = 46,540 lbs (21155 Kg) Gtw 4/3/95

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Martin Kolkel		04	03	95

APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

APRIL 10, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13806

Customer Manifest: 00001 Document: E1342 destroyed as of APRIL 03, 1995.

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

E. Marie Headman

Maggie Wilde
Manager, Environmental Affairs

B-2

E1343/950739

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: WAD009282302 | Manifest Document No.: 00002

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

Generator's Name and Mailing Address: Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone: (206) 764-4450

A. State Manifest Document Number:

B. State Generator's ID:

5. Transporter 1 Company Name: Wills Trucking, Inc.

6. US EPA ID Number: OHD068913409

C. State Transporter's ID:

D. Transporter's Phone: (801) 973-9393

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address: APTUS, Inc.
11600 North Aptus Road
Aragonite, Utah 84029

10. US EPA ID Number: UTD981552177

G. State Facility's ID:

H. Facility's Phone: (801) 531-4200

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls 9; UN3077 PGIII	RQ	001	DT	20000	Kg	
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
APTUS Profile No.: AP 149917
NWT-3 PCB-258

K. Handling Codes for Wastes Listed Above
[illegible] to Aptus in the [illegible] in accordance [illegible] authorization

15. Special Handling Instructions and Additional Information
TK No. 97
Out of [illegible] Service Date: March 27, 1995
Emergency Phone No.: (800) 323-0869

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: THERON B RAHIER | Signature: Theron B Rahier | Month Day Year: 03 31 95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: MARK THOMAS FOR WILLS TRUCKING | Signature: [signature] | Month Day Year: 03 31 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: | Signature: | Month Day Year:

FACILITY

19. Discrepancy Indication Space: Actual weight: 41,740 lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Martin Keller | Signature: [signature] | Month Day Year: 04 03 95

Style F15 REV-6 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

B-3

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APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

APRIL 10, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13807

Customer Manifest: 00002 Document: E1343 destroyed as of APRIL 03, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

E. Marie Headman

for Maggie Wilde
Manager, Environmental Affairs

B-4

E1340/950736

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. W A D 0 0 9 2 8 2 3 0 2 — Manifest Document No. 0 0 0 0 3

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Wills Trucking, Inc.

6. US EPA ID Number: O H D 0 6 8 9 1 3 4 0 9

C. State Transporter's ID

D. Transporter's Phone: (801) 973-9393

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
APTUS, Inc.
11600 North Aptus Road
Aragonite, Utah 84029

10. US EPA ID Number: U T D 9 8 1 5 5 2 1 7 7

G. State Facility's ID

H. Facility's Phone: (801) 531-4200

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyis 9; UN3077 PG III		0 0 1	DT	2 0 0 0 0	K	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APTUS Profile No.: AP149917
NVT-PCB-258

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Out of service date: March 27, 1995
Emergency Phone No.: (800) 323-0869
#99

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
THERON B RAHIER	Theron B Rahier	10 3 3 1 9 5

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
WILLS GENE D. BURT	Gene D. Burt	10 3 3 1 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space
Actual weight: 42,360 lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
RACHEL C. PASQUIER		10 4 10 4 9 5

GENERATOR — TRANSPORTER — FACILITY

Style F15 REV-6 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

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B-5

ORIGINAL - RETURN TO GENERATOR

APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448

Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029

(801) 531-4200
FAX (801) 531-4394

APRIL 10, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13805

Customer Manifest: 00003 Document: E1340 destroyed as of APRIL 04, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

Maggie Wilde
Manager, Environmental Affairs

B-6

EB41/950737

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. W A D 0 0 9 2 8 2 3 0 2 — Manifest Document No. 0 0 0 0 4 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Wills Trucking, Inc.
6. US EPA ID Number: O H D 0 6 8 9 1 3 4 0 9
C. State Transporter's ID
D. Transporter's Phone (801)973-9393

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
APTUS, Inc.
11600 North Aptus Road
Aragonite, Utah 84029
10. US EPA ID Number: U T D 9 8 1 5 5 2 1 7 7
G. State Facility's ID
H. Facility's Phone (801)531-4200

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls 9: UN3077 PGIII	RQ	0 0 1	D T	2 0 0 0 0	Kg	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APTUS Profile No.: AP149917
Non PCB - 258

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
TK NO. 130
Out of Service Date: March 27, 1995
Emergency Phone No.: (800)323-0869

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
THERON B RAHIER	Theron B Rahier	0 3	3 1	9 5

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Terry Cabiness		0 3	3 1	9 5

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Actual weight: 42,760 lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Martin Kolker		0 4	0 3	9 5

Style F15 REV-6 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

B-17

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APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

APRIL 24, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13859

Customer Manifest: 00004 Document: E1341 destroyed as of APRIL 09, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

Diane M Beale

for Maggie Wilde
Manager, Environmental Affairs

B-8

E1439/950782

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. WAD009282302 | Manifest Document No. 00005 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address: Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Wills Trucking, Inc.

6. US EPA ID Number: UTD068913409

C. State Transporter's ID

D. Transporter's Phone (801)973-9393

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
APTUS, INC.
11600 North Aptus Road
Aragonite, Utah 84029

10. US EPA ID Number: UTD981552177

G. State Facility's ID

H. Facility's Phone (801)531-4200

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls 9; UN3077 PGIII		001	DT	20000	K	
b.					PP	
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APTUS Profile No.: AP149917
NVT-PCB-258

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Out of Service Date: March 27, 1995
Emergency Phone No.: (800)323-0869
Truck No. 97

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
THEROU B RAHIER		04 04 95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
MARK THOMAS FOR WILLS TRUCKING		04 04 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space
Actual weight: 40380 lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
PETER C. PASQUIER		04 06 95

Style CF17-6 Printed by LABELMASTER, Div. of AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

B-9

APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

MAY 02, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13880

Customer Manifest: 00005 Document: E1439 destroyed as of APRIL 08, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

E. Marie Hardman

by Maggie Wilde
Manager, Environmental Affairs

B-10

E1438/95C781

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: WAD009282302 | Manifest Document No.: 0006 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
Rhone-Poulenc, Inc.
9229 E. Marginal Way So.
Seattle, Washington 98108

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Wills Trucking, Inc.

6. US EPA ID Number: OHD068913409

C. State Transporter's ID

D. Transporter's Phone (801)973-9393

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
APTUS, Inc.
11600 North Aptus Road
Aragonite, Utah 84029

10. US EPA ID Number: UTD981552177

G. State Facility's ID

H. Facility's Phone (801)531-4200

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls 9; UN3077 PGIII		001	DT	20000	K	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APTUS Profile No.: AP149917
NVT-PCB-258

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Out of Service Date: March 27, 1995
Emergency Phone No.: (800)323-0869
Truck No. 121

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
THERON B RAHIER	T Rahier	10/4/95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Terry Hill for WTI	Terry Hill	10/4/95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space
Actual weight: 43880 lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
PETER C. PASQUIER		10/6/95

Style CF17-6 Printed by LABELMASTER, Div. of AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

B-11

APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

MAY 02, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 13879

Customer Manifest: 00006 Document: E1438 destroyed as of APRIL 08, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

E. Marie Hardman

by Maggie Wilde
Manager, Environmental Affairs

B-12

E1499 / 950816

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	WAD009282302
Manifest Document No.	00007
2. Page 1 of	1
Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address	Rhone-Poulenc, Inc. 9229 E. Marginal Way So. Seattle, Washington 98108
4. Generator's Phone	(206) 764-4450
5. Transporter 1 Company Name	Wills Trucking, Inc.
6. US EPA ID Number	OHD068913409
7. Transporter 2 Company Name	
8. US EPA ID Number	
9. Designated Facility Name and Site Address	APTUS, Inc. 11600 North Aptus Road Aragonite, Utah 84029
10. US EPA ID Number	UTD981552177
A. State Manifest Document Number	
B. State Generator's ID	
C. State Transporter's ID	
D. Transporter's Phone	(801)973-9393
E. State Transporter's ID	
F. Transporter's Phone	
G. State Facility's ID	
H. Facility's Phone	(801)531-4200

	HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ	Environmentally Hazardous Substance Solid, N.O.S. Polychlorinated Biphenyls, 9; UN3077 PGIII	001	DT	32,900 lb. 20000	Kg	
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above

APTUS Profile No.: AP149917
NVT-PCB-258

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Out of Service Date: March 27, 1995
Emergency Phone No.: (800)323-0869

TRUCK # 98-312

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
THEROY B RAHIER	[signature]	04 06 95

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
BRUCE LOAKES	[signature]	04 06 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Martin Koller	[signature]	04 10 95

APTUS

Aptus
P.O. Box 27448
Salt Lake City, Utah 84127-0448
Delivery Address:
11600 North Aptus Road
Aragonite, Utah 84029
(801) 531-4200
FAX (801) 531-4394

MAY 23, 1995

RHONE POULENC INCORPORATED
9229 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON 98108

EPA ID: WAD 009 282 302

PCB

Certificate of Disposal

No. 14130

Customer Manifest: 00007 Document: E1499 destroyed as of MAY 19, 1995

This is to certify that the hazardous material manifested to Aptus on the above Aptus Document Number was disposed of by incineration in accordance with 40 CFR 761 (and 40 CFR 264 if applicable) as of the above certification date.

Attached is a detailed report which identifies the date(s) of disposal. Residue from this waste has been disposed of at an approved and permitted Hazardous Waste Landfill.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

APTUS, INC.
EPA ID # UTD 981 552 177

C. Marie Headman

for Maggie Wilde
Manager, Environmental Affairs

B-14

02/15/1995 17:34 8012565463 WESTINGHOUSE APTUS PAGE 04

APTUS
A Westinghouse Company

☐ 21750 Cedar Avenue, P.O. Box 530, Lakeville, MN 55044
☐ Hwy 169 N. Coffeyville Industrial Park, P.O. Box 1328, Coffeyville, KS 67337
☐ 11600 N. Aptus Road, P.O. Box 27448, Salt Lake City, UT 84127-0448

AP 149917

APTUS WASTE PROFILE SHEET

RECEIVED FEB 28 1995

1. GENERATOR INFORMATION

Aptus Contact: Jim Manning (801)876-3738
Generator: Rhone Poulenc Inc.
Address: 9229 E. Marginal Way So.
Seattle, WA 98108

Technical Contact: Theron B. Rahier
Phone Number: (206) 764-4450
Facility EPA ID #: WAD009282302
State ID #: Same

2. GENERAL INFORMATION

Billing Name: CEcon Corporation
Address: P.O. Box 1514
Tacoma, WA 98401

Company Contact: Charles S. Engstrom
Phone Number: (206) 272-8851
Generating Process: Compressor Leaking Hydraulic Oil - Excavated Soil/Concrete
Common Name of Waste: PCB
Rate of Generation: N/A ____ per ____ (qty.) (gal./lb./tons)

3. CHEMICAL COMPOSITION (no trade names)
(totals must add up to 100%)

Concrete - 20% - 40% %
Soil - 60% - 80% %
PCB - 0% - 10% %
Total ____ %

4. TOXICITY CHARACTERISTICS (mg/L) Other

PESTICIDES None

Endrin ____
Lindane ____
Methoxychlor ____
Toxaphene ____
2,4-D ____
2,4,5-TP (Silvex) ____
Heptachlor ____
Chlordane ____

BASE NEUTRALS

1,4-Dichlorobenzene ____
Hexachloro-1,3 Butadiene ____
Hexachloroethane ____
Nitrobenzene ____
Pyridine ____
2,4-Dinitrotoluene ____
Hexachlorobenzene ____

ACID EXTRACTABLES None

O-Cresol ____
M-Cresol ____
P-Cresol ____
Cresol ____
Pentachlorophenol ____
2,4,5-Trichlorophenol ____
2,4,6-Trichlorophenol ____

VOLATILES None

Benzene ____
Carbon Tetrachloride ____
Chlorobenzene ____
Chloroform ____
1,2-Dichloroethane ____
1,1-Dichloroethylene ____
Methyl Ethyl Ketone ____
Tetrachloroethylene ____
Trichloroethylene ____
Vinyl Chloride ____

5. TRANSPORTATION INFORMATION

Proper DOT Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S.
Hazard Class: (Polychlorinated Biphenyls)
RQ: ____ UN/NA: ____
EPA Waste Number(s): PCB2

Container Size: 2 @ 1 Liter Type: Fiberboard
Pickup Site: ____
Transporter: ____
EPA ID #: ____
Contact: ____
Phone Number: ____

6. METALS EP Toxicity Test mg/L ( ) Total ( ) TCLP ( )

Arsenic ____
Barium ____
Cadmium ____
Chromium ____
Lead ____
Mercury ____
Copper ____
Silver ____
Selenium ____
Thallium ____
Beryllium ____
Antimony ____
Nickel ____
Manganese ____
Other ____

7. PHYSICAL DESCRIPTION

( ) Organic ( ) Inorganic
Physical State:
( ) liquid ( ) semi-solid (X) solid
Phases/Layering:
( ) unilayer ( ) bilayer ( ) multilayer
% Free Liquid -0- Total Solid (wt%) 100
Odor None Color ____

8. OTHER HAZARDOUS PROPERTIES

Explosive N/A Pyrophoric N/A Radioactive N/A
Infectious N/A Reactive N/A Shock Sensitive N/A

9. FUEL BLENDING/INCINERATION PARAMETERS

BTU/lb. <1000 Ash 95.7
% Water (by wt.) ____ Specific Gravity 2.11
Flash Point (°F) >140 pH 4-11
Total Organic Halogen (%) ____ PCB 460ppm
Total Organic Sulfur ____ Viscosity solid
Miscibility With Water ____ Oxidizer ____

10. INORGANICS (mg/l or ppm)

Cyanides N/A Fluoride N/A Chloride N/A
Sulfides N/A Iodide N/A Bromide N/A

11. ATTACHMENTS 8 Sheets

Addenda ____ Lab Analysis X MSDS ____ Other ____

12. CERTIFICATION: I hereby certify that the enclosed sample and/or analytical data is representative of the waste and that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omission of composition or properties exists, and that all known or suspected hazards have been disclosed. I authorize Aptus to act as the Generator's agent in matters concerning management of the aforementioned waste.

Date: 23 Feb 1995 Authorized Signature: [signature]
Title: President

COMMENTS: (2) Two - 1 Liter Fiberboard

[handwritten initials] 3/9/95
MK 3/7/95

L9505920-001
CONCRETE, SOIL, PCB
RHONE POULENC INC.
AP149917
2/28/1995
DUE DATE IS: 3/03/1995

WHITE ENVIRONMENTAL AFFAIRS YELLOW OPERATIONS

Please sign and date the certification. Keep the gold

P.2

MAR 06 '95 10:18AM APTUS

B-15

18XT

Emergency Contact Telephone Number

314259

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: W A D 0 0 9 2 8 2 3 0 2
Manifest Document No.: 00008
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address
RHONE-POULENC
9229 E MARGINAL WAY S
SEATTLE, WA 98108-4031
4. Generator's Phone (206) 764-4450

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: JACK GRAY TRANSPORT
6. US EPA ID Number: I N D 0 4 2 5 3 4 8 7 5
C. State Transporter's ID
D. Transporter's Phone: (206) 874-9848

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CWMNW
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812-9709
10. US EPA ID Number: O R D 0 8 9 4 5 2 3 5 3
G. State Facility's ID
H. Facility's Phone: (503) 454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. ,9, UN3077, III (POLYCHLORINATED BIPHENYLS)		0 0 1	D T	11530 CRD ~~13.603~~	K	X002-dde see attached letters
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
BR3421 PCB contaminated CONCRETE

K. Handling Codes for Wastes Listed Above
11530 K.
25420 P.
L13 19-20 L12-2A3

15. Special Handling Instructions and Additional Information
BR3421 ERG# 31
11530 CRD SR# 210421
PCB Out of Service Date: 03-27-95 Weight: ~~13.603~~ Type: K
CWM Emergency Response Information (800) 765-8713

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

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Printed/Typed Name	Signature	Month	Day	Year
THERON B RAHIER	Theron B Rahier	10	4	1995

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
C R Dodge	C R Dodge	10	4	1995

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Jennifer Potter	Jennifer Potter	10	4	1995

ORIGINAL-RETURN TO GENERATOR

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 04/20/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 00008. Chemical Waste Management, Inc., hereby certifies that the above described material was landfilled in accordance with the 40 CFR part 761 as it pertains to the land disposal of Poly-Chlorinated Biphenyl contaminated materials.

Profile Number: BR3421
CWM Tracking ID: 31425901
Process: BULK/PCB/LANDFILL
Treatment Date: 04/20/95

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C 1001 and 15 U.S.C. 2615) I certify that the information contained in or accompanying this document is true accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true accurate and complete.

Della Heideman

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 19566
04/26/95

B-17

HAYS CONSULTING
Environmental Consulting Services
2401 53rd Ave. SW Seattle, WA 98116-1805 (206) 935-3548

March 25, 1996

Doris Bjorn, Senior Account Manager
Waste Management, Inc.
13225 NE 126th Place
Kirkland, WA 98034

Re: Profile and Manifest Changes for Rhône-Poulenc Inc.

Dear Ms. Bjorn:

In reviewing Rhône-Poulenc's profiles and manifests, I have found some errors that I was not aware of previously. On one profile and two manifests, the Oregon waste code for TSCA-regulated waste (X002) was used. As is indicated in the profiles for these materials, they are not regulated by TSCA. To correctly reflect the regulatory status of these wastes, I would like to make the following changes:

1) Profile BR2295--PCB Debris

The Oregon waste code, X002, should be deleted.

2) Manifest 95382--PCB Debris

The Oregon waste code, X002, should be deleted.

3) Manifest 00008--PCB-contaminated Concrete

The Oregon waste code, X002, should be deleted.

I would appreciate a written reply verifying these changes. Thank you very much for your assistance in this matter. If you have any questions, I can be reached at (206) 764-4450.

Sincerely,

Sue E. Hays
Hays Consulting

cc: Liz Luecker, CH2M Hill
Edwin Liu, Rhône-Poulenc Inc.

B-18

Recd. 10/23/96

Chemical Waste Management of the Northwest, Inc.
17629 Cedar Springs Lane
Arlington, Oregon 97812

October 18, 1996

Ms. Sue Hayes
Rhone-Poulenc Inc.
9229 E. Marginal Way So.
Seattle, WA 98108-4031

Dear Sue:

I have investigated the changes you requested in your letter dated March 25, 1996 to Doris Bjorn, and have determined that the Rhone-Poulenc profile BR2295 was changed on May 21, 1996 to delete the X002 waste code. Oregon industrial waste code X004 was added at that time according to our internal documentation.

In response to the changes requested on the 1995 manifests from Rhone-Poulenc which carried the X002 waste code, a copy of your letter was attached to each manifest for informational purposes. The waste however, was managed on site as PCB waste, per the manifested waste codes and profile at the time of receipt, the loads appear in our annual PCB Document Log, and they have already been reported on our annual TSCA report to the US EPA. It is because of this that the X002 code was not removed from the individual manifests.

If you have any further questions, or if I can be of assistance, please contact me at the Arlington facility at 541-454-3213.

Sincerely,
Chemical Waste Management of the Northwest, Inc.

Della Heideman
Records Manager

cc: Linda Wimmer
Doris Bjorn

B-19

cc: E. Lill 4/18/95

Chemical Waste Management, Inc.

Date Printed 04/12/95

WASTE PROFILE

Profile # ARL BR3421

(_) Check here if this is a Recertification

LOCATION OF ORIGINAL CWM OF THE NORTHWEST-ARLINGTON

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC
2. Generator Address: 9229 E MARGINAL WAY S
   SEATTLE WA 98108-4031
3. Technical Contact/Phone: THERON RAHIER 206/764-4450
4. Alternate Contact/Phone: SUE HAYS 206/762-7951

Generator USEPA ID: WAD009282302

Billing Address: (_) Same
CECON CORPORATION
P.O. BOX 1514
TACOMA WA 98401

Billing Contact/Phone: CHARLES ENGSTRON 206/272-8851

PROPERTIES AND COMPOSITION

5. Process Generating Waste: REMEDIATION OF PCB CONTAMINATED CONCRETE
6. Waste Name: PCB CONTAMINATED CONCRETE

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)
B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U): _____
State Waste Codes: X004

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (X) Multilayer (_) C. Free liq. range 0 to 0%

9A. pH: Range _____ or Not applicable (X) B. Strong Odor (_);describe _____

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range	Unit Description
CONCRETE	to 100	%
PCB	3 to 21	PPM
	to	
	to	
	to	
	to	
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):	100.000000	

12. OTHER: PCBs if yes, concentration < 21 ppm, PCBs regulated by 40 CFR 761 (_). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _ _____ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other _____

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (X) Bulk Liquid (_) Drum (_) Type/Size: BULK Other _____
15. ANTICIPATED ANNUAL VOLUME: 20 Units: TONS Shipping Frequency: ONE TIME

SAMPLING INFORMATION

Sample Tracking Number: 4857731

16a. Sample source (drum, lagoon, pond, tank, vat, etc.): _____
Date Sampled: _____ Sampler's Name/Company: _____
16b. Generator's Agent Supervising Sampling: _____ 17. (X) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

Signature on original profile BR3421 (Signature) THERON B. RAHIER SITE MANAGER (Name and Title) 4/07/95 (Date)

Approved 4/11/95

B-20

TO REORDER THIS FORM CALL:
ASSOCIATED BUSINESS FORMS, INC. (206) 367-9619

NATIONAL RESPONSE CENTER 1-800-424-8802

Please print or type. 31675 CCWM Form Approved. OMB No. 2050-0039. Expires 9-30-94.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. WAD009218230295382 Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
RHONE-POULENC
2229 E MARGINAL WAY S
SEATTLE WA 98108-4031
4. Generator's Phone (206 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: CHEMICAL WASTE MANAGEMENT, INC.
6. US EPA ID Number: ILD099202681
C. State Transporter's ID
D. Transporter's Phone 206 575-2250

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT OF THE NW
17629 CEDAR SPRINGS LANE
ARLINGTON OR 97812-9709
10. US EPA ID Number: ORD089452353
G. State Facility's ID
H. Facility's Phone 503 454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	EPA/I. Waste No.
a. RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S., 9, UN3077, PG III (POLYCHLORINATED BIPHENYLS)	006	DM	00688	K	X002-delete See attached letters.
b. NON REGULATED PER 49 CFR 172.101	001	DM	00800	P	X004
c. NON REGULATED PER 49 CFR 172.101	005 006	DM	00375 00330	G	X004
d. ~~NON REGULATED PER 49 CFR 172.101~~ JP	JP	DM		G	~~X004~~ JP

GENERATOR

J. Additional Descriptions for Materials Listed Above
a. BR2295 PCB DEBRIS, OUT OF SERVICE 9-1-95, RQ=1 LB
b. BR2297 DRILL CUTTINGS-POWER POLE
c. BR2290 Drill Cuttings
d. ~~BR2281~~ JP.

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
a. ERG#31 CD REQUIRED PLEASE ROUTE TO TUKWILA OFFICE PO- TSW
b. ERG#N/A AETS JOB #:95-03-5237
c. ERG#N/A CHEMTREC Emergency Response Number (800)424-9300
d. ERG#N/A LAB ASYSTANT CONFIRMATION #:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed / Typed Name: THERON B RAHIER — Signature: Theron B Rahier — Month Day Year: 10 30 95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed / Typed Name: STEVEN G. WHITE — Signature: Steven G White — Month Day Year: 10 30 95

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed / Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed / Typed Name: CAROL EVANS — Signature: Carol Evans — Month Day Year: 11 3 95

EPA Form 8700-22 (Rev. 9-91) Previous editions are obsolete.

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ORIGINAL-RETURN TO GENERATOR

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 10/31/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 95382. Chemical Waste Management, Inc., hereby certifies that the above described material was landfilled in accordance with the 40 CFR part 761 as it pertains to the land disposal of Poly-Chlorinated Biphenyl contaminated materials.

Profile Number: BR2295
CWM Tracking ID: 31967501

Process	CWM Unit	Xfer Date	Site Location	Gen #
801 DRUM/PCB/	1*0	10/31/95	LANDFILL 13	RPI-47
801 DRUM/PCB/	2*0	10/31/95	LANDFILL 13	RPI-49
801 DRUM/PCB/	3*0	10/31/95	LANDFILL 13	RPI-79
801 DRUM/PCB/	4*0	10/31/95	LANDFILL 13	RPI-81
801 DRUM/PCB/	5*0	10/31/95	LANDFILL 13	RPI-95
801 DRUM/PCB/	6*0	10/31/95	LANDFILL 13	RPI-96

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CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 10/31/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 95382. Chemical Waste Management, Inc., hereby certifies that the above described material was landfilled in accordance with the 40 CFR part 761 as it pertains to the land disposal of Poly-Chlorinated Biphenyl contaminated materials.

Profile Number: BR2295
CWM Tracking ID: 31967501

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C 1001 and 15 U.S.C. 2615) I certify that the information contained in or accompanying this document is true accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true accurate and complete.

Della Heideman

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 25857
11/18/95

6 drums

Chemical Waste Management, Inc.

Date Printed 10/20/95

WASTE PROFILE

Profile # ARL BR2295

(_) Check here if this is a Recertification LOCATION OF ORIGINAL CWM OF THE NORTHWEST-ARLINGTON

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC Generator USEPA ID: WAD009282302

2. Generator Address: 9229 E MARGINAL WAY S Billing Address: AETS
(_) Same
1120 ANDOVER PARK E
SEATTLE WA 98108-4031
TUKWILA WA 98188-3903

3. Technical Contact/Phone: THEROLI B RAHIER

4. Alternate Contact/Phone: LARRY PETERSEN 206/575-2250 Billing Contact/Phone:

PROPERTIES AND COMPOSITION

5. Process Generating Waste: PLANT CLEANUP

6. Waste Name: PCB DEBRIS

5/21/96

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)

B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U): * deleted _added

State Waste Codes: X002 X004

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (_) Multilayer (X) C. Free liq. range 0 to 0%

9A. pH: Range _____ or Not applicable (X) B. Strong Odor (_);describe _____

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range		Unit Description
BROKER CLAY TILE, PPE, WOOD, CEMENT, VISQUEEN,		to 100	%
DEBRIS CONTAMINATED WITH PCB		to	
VISUAL/LANDFILL		to	
OSD/UNIQUE DRUM #S		to	
WEIGHTS IN KILOGRAMS		to	
		to	
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):		*100.000000*	

12. OTHER: PCBs if yes, concentration 2.4 ppm, PCBs regulated by 40 CFR 761 (_). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _____ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other _____

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (_) Bulk Liquid (_) Drum (X) Type/Size: 55 GALLON DRUM Other _____

15. ANTICIPATED ANNUAL VOLUME: 20 Units: 55 GALLON DRUM Shipping Frequency: YEAR

SAMPLING INFORMATION Sample Tracking Number: 4867234

16a. Sample source (drum, lagoon, pond, tank, vat, etc.): _____

Date Sampled: _____ Sampler's Name/Company: _____

16b. Generator's Agent Supervising Sampling: _____ 17. (X) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

Signature on original profile BR2295 (Signature) THEROLI B RAHIER (Name and Title) 10/13/95 (Date)

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* see sheets attached at end.

#6

Emergency Contact Telephone Number 323087

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
WAD092823020	00014	1	

3. Generator's Name and Mailing Address
Rhone-Poulenc Inc.
9229 E. Marginal Way South
Seattle, WA 98108-4031
4. Generator's Phone (206) 764-4450

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name	6. US EPA ID Number
STEVE FORLER TRUCKING INC.	WAR000001263

C. State Transporter's ID
D. Transporter's Phone 1-800-406-1183

7. Transporter 2 Company Name	8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number
Chemical Waste Mgmt. of the NW, 17629 Cedar Springs Lane, Arlington, OR 97812-9709	ORD089452353

G. State Facility's ID
H. Facility's Phone (503) 454-2643

	HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ	Environmentally Hazardous Substance, Solid, N.O.S., 9, UN3077, III (Polychlorinated Biphenyls)	001	DT	60,000	P	~~X002~~ LS X004
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Profile BP2464 PCB Containing Waste

K. Handling Codes for Wastes Listed Above
006 60P 14 1M L13 15N 1N3

15. Special Handling Instructions and Additional Information
CD Required
Out of service date: 11/3/95

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Sue E Hays (for Rhone-Poulenc)	Sue E. Hays	03	06	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Steve Forler	[signature]	03	06	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Section I. Changes per Sue Hays / Environ Eng.
LS 3/6/96

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
CATHY EVANS	Cathy Evans	03	06	96

ORIGINAL — RETURN TO GENERATOR

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 03/06/96 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 00014.

Profile Number: BP2464
CWM Tracking ID: 32308701
Process: LANDFILL
Treatment Date: 03/06/96

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

Carol Evans for

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 30635
03/11/96

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Recert. 2/28/98

Chemical Waste Management, Inc.

Date Printed 03/15/96

WASTE PROFILE

Profile # ARL BP2464

(_) Check here if this is a Recertification LOCATION OF ORIGINAL CWM OF THE NORTHWEST-ARLINGTON

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC Generator USEPA ID: WAD009282302

2. Generator Address: 9229 E MARGINAL WAY S Billing Address: (_) Same RHONE-POULENC

FORRESTAL CAMPUS

SEATTLE WA 98108-4031 103 COLLEGE RD E

3. Technical Contact/Phone: SUE HAYS 206/764-4450 PRINCETON NJ 08540-6602

4. Alternate Contact/Phone: Billing Contact/Phone: EDWIN LIU

PROPERTIES AND COMPOSITION

5. Process Generating Waste: REMEDIATION OF PCB-CONTAMINATED SEWER LINE

6. Waste Name: PCB-CONTAINING WASTE

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)

B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U):

State Waste Codes: X004

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (_) Multilayer (_) C. Free liq. range 0 to 0%

9A. pH: Range _____ or Not applicable (X) B. Strong Odor (_);describe

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range	Unit	Description
SOIL	to 100	%	
PCB	0 to 50	PPM	
DEBRIS CONTAMINATED WITH PCB	to		
TYPE C FLY ASH OR CEMENT	1 to 20	%	
FPT/VISUAL IF UNABLE TO SAMPLE	to		
	to		
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):	120.000000		

12. OTHER: PCBs if yes, concentration < 50 ppm, PCBs regulated by 40 CFR 761 (_). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _ _____ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (X) Bulk Liquid (_) Drum (X) Type/Size: 55 GALLON DRUM Other

15. ANTICIPATED ANNUAL VOLUME: 100 Units: TONS Shipping Frequency: YEAR

SAMPLING INFORMATION Sample Tracking Number: 4873096

16a. Sample source (drum, lagoon, pond, tank, vat, etc.):

Date Sampled: _____ Sampler's Name/Company:

16b. Generator's Agent Supervising Sampling: 17. (_) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

[redacted]ature on original profile BP2464 _____ _____

Signature Name and Title Date

B-27

Forler #4 323095

Emergency Contact Telephone Number

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. WAD009282302 Manifest Document No. 00015

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address Rhone-Poulenc Inc. 9229 E. Marginal Way South Seattle, WA 98108-4031

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name Steve Forler Trucking, Inc.

6. US EPA ID Number WAR000001263

C. State Transporter's ID

D. Transporter's Phone 1-800-406-1183

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address Chemical Waste Management of the NW 17629 Cedar Springs Lane Arlington, OR 97812-9709

10. US EPA ID Number ORD089452353

G. State Facility's ID

H. Facility's Phone (503) 454-2643

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ	Environmentally Hazardous Substance, Solid, N.O.S., 9, UN3077, III (Polychlorinated Biphenyls.)	001	DT	50,000 ~~[illegible]~~	P	X004 ~~X002~~
b.						
c.						
d.						

3-7-96

J. Additional Descriptions for Materials Listed Above

Profile BP 2464

PCB-Containing Waste

K. Handling Codes for Wastes Listed Above

49280P 15 4H L13 16 N IN3

15. Special Handling Instructions and Additional Information

CD required

Out of service date: 11/3/95

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimized the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name Sue E. Hays (for Rhone-Poulenc) Signature Sue E. Hays Month Day Year 03 06 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name Mark Scott Signature Mark Scott Month Day Year 03 06 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Month Day Year

19. Discrepancy Indication Space

Section I change per Sue Hays/Enviro Eng. 3-7-96 BB

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name [illegible] Signature [illegible] Month Day Year [illegible] 96

ORIGINAL — RETURN TO GENERATOR

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 03/07/96 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 00015.

Profile Number: BP2464
CWM Tracking ID: 32309501
Process: LANDFILL
Treatment Date: 03/07/96

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

Carol Evans for

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 30664
03/12/96

B-29

CHEMICAL WASTE MANAGEMENT OF THE NORTHWEST # 174

NATIONAL RESPONSE CENTER 1-800-424-8802
OREGON ACCIDENT RESPONSE CENTER 1-800-452-0311

318251 CCWM

Please print or type. Form Approved. OMB No. 2050-0039. Expires 9-30-94.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. WDD092823025355 — Manifest Document No.

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
[redacted]HONE-POULENC
[redacted]229 E MARGINAL WAY S
SEATTLE WA 98108-4031

4. Generator's Phone (206 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: DART TRUCKING CO., INC. — 6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone: 800 426-0895

7. Transporter 2 Company Name — 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Chemical Waste Management Of The Northwest
17629 Cedar Springs Lane
Arlington, Oregon 97812-9709

10. US EPA ID Number: ORD089452353

G. State Facility's ID

H. Facility's Phone: 503-454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	EPA/I. Waste No.
a. NON REGULATED PER 49 CFR 172.101	001	CM	22640	P	X004
b.					
c.					
d.					

GENERATOR

J. Additional Descriptions for Materials Listed Above
a. WPS#BR2492
b. Sewer Cleanout Sludge - Round Intercept Sump (First Half)
c.
d.

K. Handling Codes for Wastes Listed Above
21940 Plq
23340P
L12.11-12.A.2B-2C.4

15. Special Handling Instructions and Additional Information
a. ERG#N/A CD REQUIRED PLEASE ROUTE TO TUKWILA OFFICE PO- TSW SR# 251966
b. AETS JOB #95-03-5237
c. CHEMTREC Emergency Response Number (800)424-9300
d.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed / Typed Name: THERON B RAHIER — Signature: Theron B Rahier — Month Day Year: 1 10 29 5

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed / Typed Name: Dan Barkis — Signature: Dan Barkis — Month Day Year: 1 10 29 5

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed / Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed / Typed Name: LINDA GIBBONS — Signature: Linda Gibbons — Month Day Year: 1 10 29 5

EPA Form 8700-22 (Rev. 9-91) Previous editions are obsolete.

B-30

ORIGINAL-RETURN TO GENERATOR

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 10/02/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 95355.

Profile Number: BR2492
CWM Tracking ID: 31825101
Process: LANDFILL
Treatment Date: 10/02/95

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

Carol Erawford

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 24444
10/17/95

B-31

Doris Get copies

cc: CH2M Hill (D. Corbett)

Chemical Waste Management, Inc.

Date Printed 10/16/95

WASTE PROFILE

Profile # CWL BR2492

(_) Check here if this is a Recertification LOCATION OF ORIGINAL CWM OF THE NORTHWEST-ARLINGTON

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC Generator USEPA ID: WAD009282302

2. Generator Address: 9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

Billing Address: AETS
(_) Same
1120 ANDOVER PARK E
TUKWILA WA 98188-3903

3. Technical Contact/Phone: EDWIN LIU 609/452-5064

4. Alternate Contact/Phone: THERON RAHIER (FACILITY MGR.) 206/764-4450

Billing Contact/Phone: CONTROLLER 206/575-2250

PROPERTIES AND COMPOSITION

5. Process Generating Waste: SUMP CLEANOUT (STORM WATER DRAIN) (sewer cleanout sludge in round intercept sump, square CB Sump & rd. process sump)

6. Waste Name: SUMP SEDIMENT

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)
B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U): _____
State Waste Codes: X004 WT02

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (X) Multilayer (_) C. Free liq. range 0 to 0%

9A. pH: Range _____ or Not applicable (X) B. Strong Odor (_);describe _____

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range		Unit Description
SOIL	90 to	98	%
PLASTIC	0.5 to	1	%
ABSORBENT (CEMENT)	1 to	3	%
ORGANIC MATTER (STICKS & LEAVES)	1 to	2	%
FPT/LANDFILL	to		
	to		
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):	104.000000		

12. OTHER: PCBs if yes, concentration _ _____ ppm, PCBs regulated by 40 CFR 761 (_). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _ _____ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other _____

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (X) Bulk Liquid (_) Drum (_) Type/Size: TONS Other _____

15. ANTICIPATED ANNUAL VOLUME: 100 Units: TONS Shipping Frequency: ONE TIME

SAMPLING INFORMATION

Sample Tracking Number: 4866257

16a. Sample source (drum, lagoon, pond, tank, vat, etc.): SUMP

Date Sampled: 9/21/95 Sampler's Name/Company: JIM BECK AETS

16b. Generator's Agent Supervising Sampling: _____ 17. (_) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

Signature on original profile BR2492 (Signature) | THERON B RAHIER FACILITYS MANAGER (Name and Title) | 9/22/95 (Date)

Approved 9/25/95 B-32

CHEMICAL WASTE MANAGEMENT OF THE NORTHWEST 319538 DART 163

NATIONAL RESPONSE CENTER 1-800-424-8802
OREGON ACCIDENT RESPONSE CENTER 1-800-452-0311 CCWM

Please print or type.

Form Approved. OMB No. 2050-0039. Expires 9-30-94.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: WAD009282302 — Manifest Document No.: 95366
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HONE-POULENC
229 E MARGINAL WAY S
SEATTLE WA 98108-4031

4. Generator's Phone (206 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: DART TRUCKING CO., INC.
6. US EPA ID Number: OHD009865825

C. State Transporter's ID

D. Transporter's Phone 800 426-0895

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Chemical Waste Management
Of The Northwest
17629 Cedar Springs Lane
Arlington, Oregon 97812-9709

10. US EPA ID Number: ORD089452353

G. State Facility's ID

H. Facility's Phone 503-454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. EPA/I. Waste No.
a. NON REGULATED PER 49 CFR 172.101	001	CM	EST. 17880	P	WT02 X004
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a. WPS#BR2492
b.
c. Sewer Cleanout Sludge - Round Inter-
d. cept. Sump (2nd half)

K. Handling Codes for Wastes Listed Above
17260P
L12 9/10 A 2B 2C 4

15. Special Handling Instructions and Additional Information
a. ERG#N/A CD REQUIRED PLEASE ROUTE TO TUKWILA OFFICE PO-2046TSW
b. AETS JOB #95-03-5237 5258 72
c. CHEMTREC Emergency Response Number (800)424-9300
d. Lab Asyst Conf #: 857993

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed / Typed Name	Signature	Month Day Year
THERON B RAHIER	Theron B Rahier	1 02 7 95

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month Day Year
WILFRED HAMMES	Wilfred Hammes	1 02 7 95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed / Typed Name	Signature	Month Day Year
Mitzie Yoder	[signature]	1 12 7 95

GENERATOR / TRANSPORTER / FACILITY

EPA Form 8700-22 (Rev. 9/91) Previous editions are obsolete.

ORIGINAL-RETURN TO GENERATOR

B-33

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
State EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812
(503) 454-2643

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD009282302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 10/27/95 as described on [State Manifest or Uniform] Hazardous Waste Manifest number 95366.

Profile Number: BR2492
CWM Tracking ID: 31953801
Process: LANDFILL
Treatment Date: 10/27/95

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

Linda Gibbons for

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 26052
11/18/95

B-34

...ATED BUSINESS FORMS, INC. (206) 367-9619

NATIONAL RESPONSE CENTER 1-800-424-8802

V23645

CCWM

Please print or type. Form Approved. OMB No. 2050-0039. Expires 9-30-94.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: WAD009282302 | Manifest Document No.: 95381 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
RHONE-POULENC
[redacted]229 E MARGINAL WAY S
SEATTLE WA 98108-4031
4. Generator's Phone (206 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: CHEMICAL WASTE MANAGEMENT, INC.
6. US EPA ID Number: ILD099202681

C. State Transporter's ID

D. Transporter's Phone 206 575-2250

7. Transporter 2 Company Name: DART TRUCKING CO INC
8. US EPA ID Number: ILHD009865825

E. State Transporter's ID

F. Transporter's Phone 800-926-0893

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC.
9131 EAST 96TH AVENUE
HENDERSON CO 80640
10. US EPA ID Number: COD980591184

G. State Facility's ID

H. Facility's Phone 303 289-4827

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	EPA/I. Waste No.
a. RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S., 9, UN3082, PG III (POLYCHLORINATED BIPHENYLS)	005	DM	01453	K	NONE
b. RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S., 9, UN3077, PG III (POLYCHLORINATED BIPHENYLS)	001	DM	238	K	NONE
c.					
d.					

GENERATOR

J. Additional Descriptions for Materials Listed Above
a) WPS#BR2294 PCB DECON WATER & SAND, RQ=1LB
DM#RPI-48,45,50,82,80 OUT OF SERVICE 9-1-95, PCB>50 PPM
b) WPS#BR2293 CALGON FILTER, DM#RPI-104
OUT OF SERVICE 10-20-95, PCB>50 PPM

K. Handling Codes for Wastes Listed Above
Rollins Profile #
a) HO 816869
b) HO 49009-48

15. Special Handling Instructions and Additional Information
a. ERG#31 CD REQUIRED PLEASE ROUTE TO TUKWILA OFFICE PO- TSW 25810
b. ERG#31 AETS JOB #:95-03-5237
c. CHEMTREC Emergency Response Number (800)424-9300
d. LAB ASYSTANT CONFIRMATION #:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed / Typed Name	Signature	Month	Day	Year
THERON B RAHIER	Theron B Rahier	10	30	95

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year
STEVEN G. WHITE	Steven G White	10	31	95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year
JACK SCHEEMEKER IV	Jack Scheemeker IV	11	01	95

FACIL

19. Discrepancy Indication Space

Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed / Typed Name	Signature	Month	Day	Year
Thomas J Vogt	Thomas J Vogt	11	09	95

EPA Form 8700-22 (Rev. 9-91) Previous editions are obsolete.

B-35

ORIGINAL-RETURN TO GENERATOR

PROGRAM-ID: PTR1722C ROLLINS ENVIRONMENTAL SERVICES (TX) INC
RUN DATE : 9/13/96 CERTIFICATE OF DISPOSAL
RUN TIME : 3:14 PM PAGE: 1

Certificate of Disposal Name and Address	Stream Number	Order Number	Manifest Number	Received Date	Final Disposal
	081686	191865	TX00716809	06/17/96	08/24/96

CHEMICAL WASTE MANAGEMENT
9131 E 96TH AVE
HENDERSON CO 80640
Attn: STEVE CASTAGNERI

Inventory Cntrl Nbr	Customer's Unique Serial Number	CONTAINER Type	CONTAINER Contents	Prod Code	SHP TO	Disposal Mthd	Disposal Date
600482909	RPI-82	85SO541	SLUDGE	541		I	08/23/96
	Contents Only			541		I	08/22/96
600482910	RPI-50	85SO541	SLUDGE	541		I	08/23/96
	Contents Only			541		I	08/23/96
600482911	RPI-80	85SO541	SLUDGE	541		I	08/23/96
	Contents Only			541		I	08/24/96
600482912	RPI-48	85SO541	SLUDGE	541		I	08/24/96
	Contents Only			541		I	08/24/96
600482913	RPI-45	85SO541	SLUDGE	541		I	08/23/96
	Contents Only			541		I	08/24/96
	Total Containers : 5						

This completes the Certificates of Destruction per Manifest Number TX00716809.

Disposal Methods :	
	'I' - Waste that was incinerated.
	'L' - Waste that was landfilled.
Disposal Facility :	ROLLINS ENVIRONMENTAL SERVICES (TX) INC
	PO BOX 609
	DEER PARK TX 77536
EPA ID:	TXD055141378

Under civil and criminal penalties of law for making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Please call (713) 930-2317 if there are any questions concerning the information on this Certificate of Disposal.

Bob Ellison

Authorized Agent
ROLLINS ENVIRONMENTAL SERVICES (TX) INC

PROGRAM-ID: PTR1722C ROLLINS ENVIRONMENTAL SERVICES (TX) INC
RUN DATE : 6/08/96 CERTIFICATE OF DISPOSAL
RUN TIME : 5:18 PM PAGE: 1

Certificate of Disposal Name and Address	Stream Number	Order Number	Manifest Number	Received Date	Final Disposal
	058307	188703	TX00731801	03/12/96	05/25/96

CHEMICAL WASTE MANAGEMENT
9131 E 96TH AVE
HENDERSON CO 80640
Attn: STEVE CASTAGNERI

Inventory Cntrl Nbr	Customer's Unique Serial Number	CONTAINER Type	CONTAINER Contents	Prod Code	SHP TO	Disposal Mthd	Disposal Date
600415993	RPI-104	85S0577	SOLID	577		I	05/25/96
	Contents Only			577		I	05/25/96
600415994	A-2	10S0577	SOLID	577		I	04/12/96
	Total Containers : 2						

This completes the Certificates of Destruction per Manifest Number TX00731801.

Disposal Methods :	
	'I' - Waste that was incinerated.
	'L' - Waste that was landfilled.
Disposal Facility :	ROLLINS ENVIRONMENTAL SERVICES (TX) INC
	PO BOX 609
	DEER PARK TX 77536
EPA ID:	TXD055141378

Under civil and criminal penalties of law for making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Please call (713) 930-2317 if there are any questions concerning the information on this Certificate of Disposal.

Authorized Agent
ROLLINS ENVIRONMENTAL SERVICES (TX) INC

(5 drums)

Chemical Waste Management, Inc.

Date Printed 10/24/95

WASTE PROFILE

Profile # DEN BR2294

(_) Check here if this is a Recertification LOCATION OF ORIGINAL O.S.C.O - COLORADO

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC Generator USEPA ID: WAD009282302

2. Generator Address: 9229 E MARGINAL WAY S Billing Address: (_) Same AETS

1120 ANDOVER PARK E

SEATTLE WA 98108-4031

TUKWILA WA 98188-3903

3. Technical Contact/Phone: LARRY PETERSON 206/575-2250

4. Alternate Contact/Phone: Billing Contact/Phone:

PROPERTIES AND COMPOSITION

5. Process Generating Waste: CLEANING OF SUMP

6. Waste Name: PCB DE-CON WATER AND SAND

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)

B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U):

State Waste Codes:

8. Physical State @ 70F: A. Solid(_) Liquid(_) Both(X) Gas(_) B. Single Layer (_) Multilayer (X) C. Free liq. range 30 to 80%

9A. pH: Range 6.0 to 8.0 or Not applicable (_) B. Strong Odor (_);describe

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (X) N.A. (_) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range		Unit Description
WATER	30 to	80	%
SAND/SOIL/SLUDGE	30 to	80	%
POLYCHLORINATED BIPHENYLS	0 to	1	%
	to		
	to		
	to		
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):	161.000000		

For incineration at APTUS

12. OTHER: PCBs if yes, concentration ≥ 0.0001 ppm, PCBs regulated by 40 CFR 761 (X). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (_) Bulk Liquid (_) Drum (X) Type/Size: 55 GALLON DRUM Other MUST BE IN 17E, 5 or 5B CONTA

15. ANTICIPATED ANNUAL VOLUME: 15 Units: DRUMS Shipping Frequency: YEAR

SAMPLING INFORMATION Sample Tracking Number: 4868039

16a. Sample source (drum, lagoon, pond, tank, vat, etc.):

Date Sampled: Sampler's Name/Company:

16b. Generator's Agent Supervising Sampling: 17. (_) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

Signature on original profile BR2294

Signature | Name and Title | Date

B-40

Chemical Waste Management, Inc.

Date Printed 03/15/96

WASTE PROFILE

exp. 11/7/97 Recert. 2/26/98

Profile # DEN BR2293

(_) Check here if this is a Recertification LOCATION OF ORIGINAL O.S.C.O - COLORADO

GENERAL INFORMATION

1. Generator Name: RHONE-POULENC Generator USEPA ID: WAD009282302

2. Generator Address: 9229 E MARGINAL WAY S Billing Address: AETS
(_) Same
1120 ANDOVER PARK E
SEATTLE WA 98108-4031
TUKWILA WA 98188-3903

3. Technical Contact/Phone: LARRY PETERSON 208/575-2250

4. Alternate Contact/Phone: Billing Contact/Phone:

PROPERTIES AND COMPOSITION

5. Process Generating Waste: FILTERING STORM WATER CONTAMINATED WITH PCB'S

6. Waste Name: PCB CONTAMINATED FILTERS

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (X)
B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U):

State Waste Codes:

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (_) Multilayer (X) C. Free liq. range 0 to 0%

9A. pH: Range _____ or Not applicable (X) B. Strong Odor (_);describe

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range	Unit Description
CARBON MEDIUM FILTERS	99 to 100	%
PCB'S	0 to 1	%
	to	
	to	
	to	
	to	
TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%):	101.000000	

12. OTHER: PCBs if yes, concentration > 750 ppm, PCBs regulated by 40 CFR 761 (X). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration _ ppm. NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (_) Bulk Liquid (_) Drum (X) Type/Size: 55 GALLON DRUM Other OSTD / MUST BE IN SONOCO POLY

15. ANTICIPATED ANNUAL VOLUME: 5 Units: DRUMS Shipping Frequency: YEAR

SAMPLING INFORMATION Sample Tracking Number: 4868685

16a. Sample source (drum, lagoon, pond, tank, vat, etc.):

Date Sampled: _____ Sampler's Name/Company:

16b. Generator's Agent Supervising Sampling: 17. (_) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

ture on original profile BR2293 | | |
Signature | Name and Title | Date

326326   Comp # 3034958

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. WAD009282302	Manifest Document No. 00016	2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Rhone-Poulenc Inc.
9229 E. Marginal Way South, Seattle WA 98108-4031

4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Diablo Transportation
6. US EPA ID Number: CA0000367755

C. State Transporter's ID

D. Transporter's Phone 800-826-2953

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Chemical Waste Management
Of The Northwest
17629 Cedar Springs Lane
Arlington, Oregon 97812-9709

10. US EPA ID Number: ORD089452353

G. State Facility's ID 9-4-96 BB

H. Facility's Phone 541 503-454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Environmentally Hazardous Substance Solid, N.O.S., 9, UN3077, III (Polychlorinated Biphenyls)		001	CM	34300 ~~45000~~	P	X004
b.	9-4-96 BB					
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Profile BP2464
PCB-Containing Waste

K. Handling Codes for Wastes Listed Above
31300P
L13.18.0.1W.3

15. Special Handling Instructions and Additional Information
*CD Required

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
Theron B. Rahier	Theron B Rahier	08 23 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Richard Taylor	Richard Taylor	08 23 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space
Discrepancy in weight changed by transporter / lg / 9-03-96

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
LINDA GIBBONS	Linda Gibbons	09 03 96

CWM OF THE NORTHWEST
Federal EPA ID: ORD089452353
17629 CEDAR SPRINGS LANE
ARLINGTON, OR 97812

RHONE-POULENC
ATTN: MANIFEST SECTION
WAD00[illegible]2302
9229 E MARGINAL WAY S
SEATTLE WA 98108-4031

CERTIFICATE OF DISPOSAL

Chemical Waste Management, Inc. has received waste material from RHONE-POULENC on 09/03/96 as described on [State Manifest or Uniform Hazardous Waste Manifest number 00016.

Profile Number: BP2464
CWM Tracking ID: 32632601
Process: LANDFILL
Treatment Date: 09/03/96

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

Mikie Hooks for

DELLA HEIDEMAN
RECORDS MANAGER
Certificate # 36120
09/06/96

CANADIAN MANIFEST INFORMATION:	APPLIES ONLY TO CANADIAN GENERATED WASTE	
CANADIAN MANIFEST NUMBER	QTY DISPOSED (KG)	DISPOSAL CODE (CANADA)

B-43

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

CCWM

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 70398

2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
RHODIA INC.
8229 E MARGINAL WAY S.
SEATTLE WA. 9810-4031
4. Generator's Phone (206) 764-4450

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: ADVANCED ENVIR TECH SERV(RETS)
6. US EPA ID Number: N J D 0 8 0 5 3 1 3 5 3
C. State Transporter's ID
D. Transporter's Phone 206)575-2250

7. Transporter 2 Company Name: TRI-STATE MOTOR TRANSIT
8. US EPA ID Number: M O D 0 9 5 0 3 8 9 9 8
E. State Transporter's ID
F. Transporter's Phone 800)234-8766

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT OF THE NW
17629 CEDAR SPRINGS LANE
ARLINGTON OR 97812-9709
10. US EPA ID Number: O R D 0 8 9 4 5 2 3 5 3
G. State Facility's ID
H. Facility's Phone (541)454-2643

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, ENVIRONMENTALY HAZARDOUS SUBSTANCES, SOLID N.O.S. (Polychlorinated Biphenyls), 9, UN 3077 (PCB's)	X	2 00	DM	800	P	X002
b. Non-Regulated Materials Per 40 & 49 CFR		1 00	DM	200	P	X004
c. Non-Regulated Materials Per 40 & 49 CFR		002	DM	600	P	X004
d.						

J. Additional Descriptions for Materials Listed Above
WPS# BR ~~2293~~ 2293
WPS# BR 2290
a. BR 2293
b. BR 2290
c. BP 2464
DEN 3/30/98
(As directed by Paul Schultz (W.M.))

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ERG# 171
ERG# N/A
24 hour Emergency Response Number 888/353-2387

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway *according to applicable international and national government regulations.*

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
THERON B RAHER		03 30 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
BRAD OTTO		03 30 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

Style CF 17 LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK | PRINTED WITH SOY INK

GENERATOR COPY

R-44

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

January 13, 1999

Reply To
Attn Of: WCM-121

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Timothy H. Goodson
Director, Environmental & Remediation Services
HSE Corporate Services
Rhodia Inc.
CN 7500
Cranbury, New Jersey 08512-7500

Re: Determination of Need for Additional Work
Administrative Order on Consent for Corrective Action ("Order")
Docket No. 1091-11-20-3008(h)
Rhone-Poulenc, Inc. Tukwila Facility
WAD 00928 2302

Dear Mr. Goodson:

On August 8, 1997, the U.S. Environmental Protection Agency Region 10 ("EPA") issued a "Determination of need for additional work" regarding corrective actions under the Resource Conservation and Recovery Act (RCRA) at the Rhone-Poulenc, Inc., facility ("RP") located on E. Marginal Way in Seattle, Washington. RP was required to perform a three-dimensional ground water characterization to determine definitively whether the plume of contamination was stable and not discharging to the Duwamish River, or whether it was in fact migrating and bypassing existing monitoring points. This request for additional work was withdrawn by EPA on August 27, 1998, with the understanding that a request for additional ground water characterization would be reissued at a later date.

At the time of the August 8, 1997, letter, there was insufficient data to demonstrate that: (1) the source of toluene is controlled and will be eliminated through natural processes within a reasonable period of time; (2) the plume is not migrating from the site and reaching the Duwamish River; (3) the plume could never reach the Duwamish River; or (4) future site activities and development could not otherwise release the contaminated ground water into the environment.

Sampling conducted by Rhodia in October, 1997, confirmed that the plume of toluene present at the facility is in fact migrating towards the Duwamish River. Sampling was also

conducted by Rhodia in March, 1998 ("Round 5"). Results of the Round 5 sampling event were rejected by EPA on December 28, 1998, due to deviations from standard quality assurance/quality control protocols. This sampling event serves to confirm that plumes of toluene and metals exist in the ground water beneath the facility, but does not yield any additional information regarding the extent of these plumes or the mechanisms governing their migration.

Based on the new information obtained in the October 1997 sampling event, EPA is hereby reissuing a determination of need for additional work pursuant to Paragraph 7.11 of the Order. EPA requires RP and its successors, Rhodia Inc. and Container Properties L.L.C., to perform additional three-dimensional ground water characterization in order to determine the rate and extent of migration of the plumes of contamination (including both toluene and metals) emanating from the facility. Ground water characterization shall include a tidal study as described in the enclosed Scope of Work. Ground water characterization shall also include a program of quarterly ground water monitoring for all hazardous constituents and other geochemical indicator parameters as described in the enclosed Scope of Work. Quarterly ground water monitoring must continue until decisions are made on appropriate Corrective Measures. Ongoing monitoring as appropriate, based on the chosen corrective measure, will be required to continue throughout implementation of Corrective Measures until the concentrations of all hazardous constituents are below the Media Cleanup Standards (to be set at a later date).

In accordance with Paragraph 7.12 of the Order, EPA hereby requires that a work plan for Additional Work be submitted within sixty (60) calendar days of receipt of this letter. This work plan must address all items identified in the enclosed Scope of Work. EPA's review and approval of the work plan will be subject to the procedures set forth in Section VII of the Order.

Please call me at (206) 553-8506 if you have any questions.

Sincerely,

Christy Brown

Christy Brown
Project Manager
RCRA/TSCA Permits Team

Enclosure

cc: B. Maeng, Ecology NWRO
P. Wold, RCI Environmental, Inc.
C. Blumenfeld, Bogle & Gates
D. Verfurth, Carney Badley Smith & Spellman
M. Gearhart, ARCADIS Geraghty & Miller

Rhone-Poulenc Facility
Tukwila, Washington
WAD 00928 2302

ADDITIONAL WORK REQUIRED
Scope of Work
January 12, 1998

Objective: To characterize the rate and extent of migration of the plumes of contamination emanating from the facility.

Scope of Work:

1. **Tidal study.** The tidal study work plan shall be submitted to EPA within sixty (60) calendar days. The tidal study work plan shall be implemented within thirty (30) days of EPA's approval or modification and approval of the work plan.

2. **Ground water sampling and analysis.** The ground water sampling and analysis plan shall be submitted to EPA within sixty (60) calendar days. The ground water sampling and analysis plan shall be implemented within thirty (30) days of EPA's approval or modification and approval of the work plan, and shall continue on the schedule specified in the approved sampling and analysis plan until such time as this requirement is modified by EPA.

Work Requirements:

1. **Tidal study.**

   General Objective: Conduct a tidal study to determine the effects of tidal influence on migration of the contaminant plumes at the facility by obtaining mean gradients, both horizontal and vertical, which can be used to define major flow directions and fluxes. The work plan must include provisions to continuously monitor specified monitoring wells with pressure transducers, to provide water level elevation data to define the gradients at different depths in the aquifer, with the time interval selected to monitor the site over the entire tidal ranges present in the daily tidal cycles. Time periods selected for analysis of the data shall include extreme cases of gradient reversal, and the time period chosen for tidal monitoring must be based on the predicted usefulness of that period to meet the objectives of the plan.

Unless an equal or better work plan is proposed, with acceptable supporting evidence to change these requirements, the work plan must address the following items:

1. The objectives of the work plan and the field work must be clearly articulated.

2. Indicate which monitoring wells and surface water tidal stations are to be used in the tidal study. The wells to be monitored must include both shallow and deep zones, and must include, at a minimum, monitoring wells MW-21, MW-22, MW-H11, MW-13, MW-12, DM-08, MW-36, MW-37, MW-16, MW-H10, MW-H01, MW-25, MW-26, MW-27, MW-28, MW-18, MW-29, and MW-30. Additional wells may be included as appropriate.

3. All the selected wells must be instrumented with pressure transducers selected for the appropriate pressure range. Each pressure transducer should be set to obtain data at 5 to 10 minute intervals.

4. The field work must obtain sufficient data to determine mean water levels using a method such as Serfes (1991)[1], or propose an alternate method which may be considered equal or better. The plan must include details of the method proposed for obtaining and analyzing the data, reference the method developer, and document why it is an appropriate method for use at this site.

5. The field plan and field work must collect the necessary data to calculate hydraulic conductivity, storage coefficient, and transmissivity. Unless an acceptable value of hydraulic conductivity and storage coefficient can be obtained from the existing site data it will be necessary to do a long term (about three days) pump test at the site. If it is determined that a pump test is necessary, a work plan for performance of the pump test must be included.

6. The hydraulic conductivity should also be calculated using the amplitude ratio and the phase lag methods (both for the long cycles and all the cycles) according to Ferris (1951)[2].

7. The plan must specify the expected time period for which transducer data will be obtained. EPA expects that the data period must be at least several days in length to provide enough data for mathematical analyses. For example, the wells should

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[1] Serfes, M.E., 1991, Determining the mean hydraulic gradient of ground water affected by tidal fluctuation, Ground Water, v. 29, pp. 549-555.

[2] Ferris, J.G., 1951, Cyclic fluctuations of water level as a basis for determining aquifer transmissivity, Intl. Assoc. Sci. Hydrol., Pub. 33, pp. 148-155.

be monitored for a minimum of 73 hours to allow for the Serfes (1991) calculations to be performed. The work plan must explain the rationale for the proposed time period of the study, and how that period will be appropriate to reach the objectives of this work.

8. The data obtained should be represented in tabular form, and in addition, the hydrographs for all the wells and the surface water tidal station(s) should be plotted at the same scale to allow the data from different wells to be superimposed on each other to define the time lag and the magnitude of the changes in elevations visually.

9. The final tidal study report must propose a schedule for ground water sampling and analysis, based upon the site-specific information obtained from this tidal study.

2. Ground water sampling and analysis.

General objective: A well thought out ground water sampling and analysis plan is necessary in order to ensure that ongoing sampling events yield high quality data specific to the environmental conditions at this facility. The sampling and analysis plan shall include provisions for assessing ground water quality in and around the plumes of contamination emanating from the facility. At a minimum, this sampling and analysis plan shall include but not be limited to:

1. The objectives of the sampling and analysis plan must be clearly articulated.

2. Background.

3. Maps and Figures.

4. Rationale for sample locations, numbers of samples and analytical parameters. The sampling and analysis plan must specify a minimum of three samples (to be representative of the range of contaminant concentrations present at the facility) from the initial round of sampling which shall be analyzed for all constituents specified in Appendix IX of 40 C.F.R. Part 264. Parameters for subsequent sampling events shall be selected, subject to EPA review and approval, based on the results of initial ground water sampling and analysis. Analysis for ground water samples from the remaining wells must include a full volatile organic scan as well as, at a minimum, the following metals of concern: Chromium, Zinc, Copper, Nickel, Cadmium, Arsenic, Vanadium, Selenium, Mercury, Lead, and Thallium. The following geochemical indicator parameters must also be included in the analyte list (for either field or laboratory, as necessary, to obtain accurate values): Dissolved Oxygen, Iron (II), Sulfate, Methane, Oxidation Reduction

Potential, pH, Total Organic Carbon, Temperature, Alkalinity, Chloride, Sodium, Manganese, and Electrical Conductivity. The rationale for selection of these and all other parameters shall be provided. Summary tables showing each parameter, method, detection limit to be achieved, etc., must be included in the sampling and analysis plan.

5. Initial sampling schedule. At a minimum, this schedule shall include collection of ground water samples for chemical analyses and geochemical indicator parameters from each well on a quarterly basis to characterize temporal trends and variations in contaminant concentration. Note that wells whose water level elevation fluctuate widely may require sampling at high and low water levels during some sampling events. If adjustments to the initial sampling schedule are determined to be necessary based upon the results of the Tidal Study, a new sampling schedule shall be established upon EPA approval or modification and approval of the final Tidal Study report.

6. Field methods and procedures. At a minimum, the field methods and procedures must include a discussion of potential interferences at the facility, procedures for measuring and recording all ancillary field data, purging procedures, disposal of contaminated materials, methods for sample collection (including methods for handling effervescing samples and low-flow sampling), selection of appropriate sample containers, sample preservation, sample packing and shipment, quality control samples, equipment decontamination, methods and documentation of field sampling and field measurement, and chain-of-custody procedures. Note that EPA continues to recommend sampling the volatile organic analytes (VOAs) and preserving the samples only with ice and without acid to prevent effervescence, followed by same-day laboratory analysis to minimize loss of contaminants from the samples. This section must also include provisions for sampling and reporting of the occurrence, amount, thickness, and composition of any non-aqueous phase liquids encountered in any monitoring wells.

7. Sample analysis. This section must include laboratory chain-of-custody procedures, sample storage procedures and holding times, sample preparation methods, analytical procedures (including potential interferences, precision and accuracy, and method detection limits), calibration procedures and frequency, data reduction, validation, and reporting, and internal quality control checks.

8. Site safety plan.

9. Field and laboratory quality assurance/quality control procedures.

10. Reporting requirements.

TERRA NOVA

ASSOCIATES

Environmental Consultants

Round 5 Groundwater Sampling Report

for

Rhone-Poulenc Inc. Facility
9229 East Marginal Way South
Tukwila, Washington

Prepared by

Terra Nova Associates
Environmental Consultants
P.O. Box 657
Allentown, NJ 08501

May 1, 1998

Stephen A. Borgianini, REA
President

Introduction

Terra Nova Associates conducted groundwater sampling of twenty-four (24) newly and previously installed groundwater monitoring wells at the Rhone-Poulenc Inc. facility located at 9229 E. Marginal Way South, Tukwila, Washington on March 15, 16, 17 and 18, 1998. The sampling was conducted according the RCRA Groundwater Monitoring: Draft Technical Guidance Document (1992), the Terra Nova Associates "Low Flow" Groundwater Sampling Policy (Standard Operating Procedure # FS - 118) and Puls, R.W. and M.J. Barcelona, Ground Water Sampling for Metals Analysis, USEPA/540/8-95/504). When situation were encountered in the field that were not discussed in the above mentioned documents, or when procedures conflicted among these documents, the sampling was completed by utilizing procedures/protocol as similar as possible to the procedures found in the RCRA Groundwater Monitoring: Draft Technical Guidance Document.

Table 1.0 was prepared by Arcadis, Geraghty & Miller, Seattle, WA and summarizes the laboratory results form the samples collected during the Round 5 Groundwater Sampling Event. Table 2 .0 lists the well identification, date of collection, well depth, depth to water, purge time, purge volume, and field parameter results. Table 3.0 lists the order in which sample parameters were collected at each well. Chain of custody forms are found in Appendix I.

Description of Sampling Event; Procedures

PURGING AND SAMPLING EQUIPMENT

Purging and sampling equipment utilized for this project included 24 dedicated teflon® and stainless steel QED Model T1200M two-inch bladder pumps with pre-cut sections of paired teflon tubing; QED Model 350 electronic-timed controller; two (2) Horiba™ Model U-10 water quality meters; one (1) Orion™ Model 250A ORP meter with Ag/AgCl ORP electrode; one (1) Hach™ Model DR/700 colorimeter; one (1) ORS™ Model 1068 interface probe to determine if floating product was present in each well; and one (1) Slope Indicator™ water level indicator.

CLEANING PROCUDEURES FOR NON-DEDICATED EQUIPMENT

The procedure for cleaning the water level indicator between wells is as follows:

-Wipe wire with DI soaked paper towel.
-Wash tip in Alconox™ solution.
-Rinse with DI water and pat dry with a paper towel.
-Store in a polyethylene lined box.

FIELD METER CALIBRATION

Terra Nova Associates is a certified lab in New Jersey for the USEPA "analyze immediately" parameters (pH, Temperature, Dissolved Oxygen, Residual Chlorine, and Sulfide) and specific conductance. In order to maintain certification, successful completion of EPA Water Pollution Study proficiency samples, maintenance of field and calibration logs, and maintenance of calibration and sample analysis SOP's. Copies of Terra Nova's current SOP's and latest results of EPA Water Pollution Study 033 are available upon request.

pH Meter Calibration

The Horiba™ Model U-10 pH meter is calibrated at the beginning of each day and every four hours thereafter (or every ten samples). If the analyst suspects an erroneous result the meter will be recalibrated at any time and then at the end of the day. Several backup pH probes are carried as spares in case of probe poisoning.

Specific Conductance

The Horiba™ Model U-10 meter also measures specific conductance and is calibrated at the beginning of each day, every four hours (or ten samples), and at the end of the day with a two-point calibration (either 100 um/cm and 1,000 um/cm or 1,000 um/cm and 10,000 um/cm), whichever applies so that samples fall within range.

ORP Measurement

The Orion™ Model 250 A ORP meter measures oxidation-reduction potential in +/-mv. Calibration is at the beginning of each day's sampling with YSI # 3682 Zobell solution (prepared 3/10/98), every four hours (or ten samples) and at the end of the day.

Dissolved Oxygen

DO is measured with the Horiba™ Model U-10 meter with Clark-type probe. The meter is calibrated once per week by the Winkler Method and daily by the saturated water method. Field calibration is also conducted daily at the beginning of the day, every four hours (or ten samples) and at the end of the day.

Salinity

Salinity is measured (%) with the Horiba™ Model U-10 meter. The meter is calibrated once per day by a 0 - point calibration based upon a distilled/deionized water blank. This field calibration is conducted daily at the beginning of the day, every four hours (or ten samples) and at the end of the day.

Ferrous Iron Measurement

The Hach™ Model DR/700 colorimeter measures Ferrous Iron concentrations in mg/l. Calibration is at the beginning of each day's sampling with the Phenanthroline Method (adapted from *Standard Methods for the Examination of Water and Wastewater*) at wavelength 500. A standard curve is prepared with stock 0.0125N Ferrous Ammonium Sulfate solution to demonstrate instrument sensitive across the suspected range of sample concentrations.

WELL MICRO-PURGE METHODS

During Groundwater Monitoring Round 4, QED bladder pumps were permanently installed in eighteen (18) wells. Due to ponding of rain water and the potential for flooding of the protective casings, three (3) pumps were removed from the wells where ponding is a problem (H-11, MW-19, MW-20) to avoid problems with potential contamination of groundwater from stormwater runoff. New sealing and locking caps were used to ameliorate this problem and these pumps were permanently reinstalled.

Additionally, new QED bladder pumps were permanently installed in fifteen (15) newly installed monitoring wells. The bladder pump, connected to paired teflon tubing, was lowered to a depth approximately 1.5' above the bottom of the well screen. The air line was connected to the controller and the discharge line to a container (graduated in liters). Compressed Nitrogen was utilized as the purging gas. The nitrogen pressure was adjusted along with the refill and discharge time to get a smooth even flow of 0.10 to 0.30 liters/min. Initial flow was timed by the graduated bucket and stopwatch method. Thereafter flow was totaled and the actual clock time recorded. The water level was also monitored during micro-purging. If water level was dropping significantly (> 0.5'), the micro-purge rate was slowed by reducing pressure or increasing the refill time. See the Field Parameter Measurement Section for information on determination of purge completion. When purging was completed, flow was further reduced to 0.10 liters/min., or the lowest possible flow rate, for sampling.

SAMPLING PROCEDURE, GENERAL

Wells were unlocked and inspected for damage and problems were noted in the log. A water level measurement was taken and recorded. Calculations were made as to the volume of water in the well (a two-inch well contains 0.163 gal./ft. and a four-inch well as 0.652 gal./ft.). At the beginning of the day the field meters were standardized and rechecked every four hours, thereafter. Micro-purging was begun and flow was measured by stopwatch and graduated bucket. Flows were adjusted to approx. 0.10 to 0.30 liters/min to allow for a low stress purging and sampling environment to keep turbidity and disturbance to a minimum. Field parameters (DO, Sp. Cond., Temp., pH, Salinity, Redox Potential) were monitored on a liter by liter frequency. When successive measurements are within +/- 0.1 pH units, +/- 3% Specific Conductance, +/- 10 mv Redox Potential, and +/- 10% DO, Turbidity, and Salinity, sampling began.

The bladder pump flow was slowed to approx. 0.1 liter/min for sampling. A final water level measurement was taken prior to sampling.

FIELD QUALITY CONTROL - TRIP BLANKS

Trip blanks were provided by the lab (IEA of Monroe, CT). One trip blank was included with each shipment of volatile organic samples sent to the lab. Trip blanks are left unopened through the sampling event.

DUPLICATES, MATRIX SPIKE, MATRIX SPIKE DUPLICATE

Two (2) field duplicates were collected at wells MW-18 and MW-25. Two (2) matrix spike/matrix spike duplicate samples were collected at MW-16 and MW-17, respectively.

FIELD PARAMETER MEASUREMENTS

Field measurements were taken for temperature in degrees centigrade, pH in standard units (neg. log of hydrogen ion conc.), specific conductance in micromho/cm, dissolved oxygen in ppm, salinity in %, Ferrous Iron in mg/l, and ORP in +/-mv. In most cases readings were collected within 5 to 10 minutes of the start of purging and roughly every 5 minutes thereafter. This testing frequency translated to an initial purge volume of 2 to 3 liters prior to the first micro-purging field parameter measurement. Field parameter measurements were made at least every liter thereafter. Terra Nova utilized this field parameter measurement interval based on recommendations in the RCRA Draft TGD, Nov. 1992, which states that field parameter measurements for low flow purging field measurements should be at least 3 minutes apart.

Purging was considered complete when successive readings of all parameters were within +/- 0.1 pH units, +/- 3% Specific Conductance, +/- 10 mv Redox Potential, and +/- 10% DO, Turbidity, and Salinity. See Table 2.0, Field Parameters and Purge Data, for specific readings and flow rates for each well. See the section on field meters for standardization frequency.

SAMPLE HANDLING

Upon collection of samples for each well, the bottles were placed in a cooler with double-bagged wet ice and brought back to the staging area when each cooler was full. At the end of the day's sampling the Dissolved Permanent Gases samples were segregated from other samples. All containers were placed into their respective coolers and packed with double-bagged wet ice. The Chain of Custody documentation was sealed in a plastic bag and the cooler was custody sealed and hand carried to Federal Express for overnight shipment.

Description of Sampling Event; Sampling Notes

Product (LNAPL Phase)

LNAPL was detected on the surface of the groundwater in well H-10. The thickness of this product layer was determined to be 0.54'.

Effervescence

At several wells, the sample was added to the VOA vials preserved with HCl and excessive foaming was encountered. A bubble-free seal on the VOA vials was very difficult to obtain. Refilling the vials was necessary on several occasions; therefore, reduced levels of HCl preservative are assumed to be present in the following samples:

MW-15	MW-23	MW-21
MW-30	MW-33	H-11

TABLE 3.0

Sample Parameter Collection Order

1. Volatile Organics (Toluene)
2. Dissolved Permanent Gases
3. Total Organic Carbon
4. Total Metals
5. Dissolved Metals
6. Water Quality Parameters

Appendix I
CHAIN OF CUSTODY FORMS

American Environmental Network

200 N[illegible]e Turnpike • Monroe, CT 06468 • 203-261-4458

AEN

CHAIN OF CUSTODY RECORD

NO. [illegible]

AEN JOB #:

CLIENT: [illegible]

PROJECT ID: [illegible]

AEN PROJECT MGR: [illegible]

RUSH ☐ YES ☐ NO | DUE DATE

BOTTLE SET #	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX	LAB ID	QC Y / N	TESTS: [illegible]	[illegible]	Metals Dissolved	BOD-TDS Alk-SO4 NO2-NO3	NH3 COD TOC				GENERAL REMARKS / SAMPLE REMARKS
						BOTTLE TYPE AND PRESERVATION: [illegible]	[illegible]	500ml Plastic HNO_3	1L Plastic Unp.	500ml Plastic H_2SO_4				
						FIELD FILTERED - CIRCLE Y or N: N	N	Y	N	N	Y / N	Y / N	Y / N	
	MW-21	3/16/98 1525	[illegible]		[illegible]	[illegible]		1	1	1				
[illegible]	MW-31	3/16/98 1610	[illegible]		[illegible]			1	1	1				
	MW-32	3/16/98 1700	[illegible]		[illegible]			1	1	1				
[illegible]	Trip Blank		[illegible]		[illegible]	0		0	0	0				
[illegible]			[illegible]					1	1	1				
			[illegible]		[illegible]	[illegible]		1	1	1				
			[illegible]					1	1	1				
			[illegible]		[illegible]			1	1	1				
			[illegible]		[illegible]			1	1	1				
			[illegible]		[illegible]			1	1	1				

MATRIX CODES

- A - AIR
- AQ - AQUEOUS
- C - COMPLEX
- D - DRUM WASTE
- OI - OIL
- S - SOIL
- SL - SLUDGE
- W - WIPE
- 0 - OTHER
- FB - FIELD BLANK
- TB - TRIP BLANK

BOTTLES PREPARED BY	DATE / TIME	BOTTLES REC'D BY	DATE / TIME
SIGNATURE		SIGNATURE	
SAMPLES COLLECTED BY: S. [illegible]	3/16/98	RECEIVED IN LAB BY	DATE / TIME
SIGNATURE: [illegible]	1800	SIGNATURE	

REMARKS ON SAMPLE RECEIPT

- ☐ BOTTLES INTACT
- ☐ CUSTODY SEALS
- ☐ PRESERVED
- ☐ SEALS INTACT
- ☐ CHILLED
- ☐ SEE REMARKS

CLIENT COPY

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AEN

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 | NO. [illegible]098-0537A

AEN JOB #:	
CLIENT:	[illegible]
PROJECT ID:	[illegible]
AEN PROJECT MGR:	ERIC L. JOHNSON
RUSH	☐ YES ☐ NO
DUE DATE	

TESTS / **BOTTLE TYPE AND PRESERVATION** / **FIELD FILTERED - CIRCLE Y or N**

Test						[illegible]	[illegible]	Metals Dissolved	BOD - TDS Alk - SO4 NO2 - NO3	NH3 COD TOC			
Bottle type and preservation						[illegible]	[illegible] VOA VIAL	500ml Plastic HNO_3	1l Plastic Unp.	500ml Plastic H_2SO_4			
Field filtered						Y / (N)	Y / (N)	(Y) / N	Y / (N)	Y / (N)	Y / N	Y / N	Y / N

BOTTLE SET #	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX	LAB ID	QC Y / N	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	SAMPLE REMARKS
	B-5	3/15/98 1030	W		N	1	2	1	1	1				
	B-6	3/15/98 1140	W		N	1	2	1	1	1				
	M-18	3/16/98 0745	W		N	1	2	1	1	1				Toluene odor
	M-18 Dupli.	3/16/98 0745	W		Y		2	1	1	1				Duplicate of MW-18
	~~H-9~~ MW35	3/16/98 0955	W		N	1	2	1	1	1	-			
	H-9	3/16/98 1055	W		N		2	1	1	1				
	MW-30	3/16/98 1155	W		N		2	1	1	1				
	MW-29	3/16/98 1240	W		N	1	2	1	1	1				
	H-10	3/16/98 1330	W		N		2	1	1	1				
	MW-22	3/16/98 1435	W		N		2	1	1	1				

MATRIX CODES

A - AIR	S - SOIL
AQ - AQUEOUS	SL - SLUDGE
C - COMPLEX	W - WIPE
D - DRUM WASTE	O - OTHER
OI - OIL	FB - FIELD BLANK
	TB - TRIP BLANK

	DATE / TIME		DATE / TIME
BOTTLES PREPARED BY	3/ /98	BOTTLES REC'D BY	
SIGNATURE [signature]	1200	SIGNATURE	
SAMPLES COLLECTED BY S.A. [illegible]	3/16/98	RECEIVED IN LAB BY	
SIGNATURE [signature]	1700	SIGNATURE	

REMARKS ON SAMPLE RECEIPT

☐ BOTTLES INTACT	☐ CUSTODY SEALS
☐ PRESERVED	☐ SEALS INTACT
☐ CHILLED	☐ SEE REMARKS

GENERAL REMARKS

CLIENT COPY

American Environmental Network
200 [illegible]oe Turnpike • Monroe, CT 06468 • 203-261-4458

CHAIN OF CUSTODY RECORD

PAGE OF | NO.

AEN JOB #:

CLIENT: Rhone Poulenc Inc.

PROJECT ID: R 22345 - Seattle

AEN PROJECT MGR: Eric Johnson

RUSH ☐ YES ☐ NO | DUE DATE

BOTTLE SET #	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX	LAB ID	QC Y / N	TESTS: Metals Total	VOA	Metals Dissolved	BOD - TOC AlK - SO4 NO2 - NO3 NH3 COD TOC					FIELD FILTERED - CIRCLE Y or N								SAMPLE REMARKS
						BOTTLE TYPE AND PRESERVATION: HNO_3 PL 500	HCl VOA Vial	500ml Plastic HNO_3	1 l Plastic Unp.	500ml Plastic H_2SO_4				Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	
14	MW-33	3/11/ [illegible]	W			1	2	1	1	1												
15	MW-34	[illegible]																				
16	MW-23	[illegible]																				
17	MW-24	[illegible]																				
18	H-11	[illegible]																				
19	MW-25	[illegible]																				
20	MW-25 Dup.	[illegible]																				
21	MW-26	1455																				
22	MW-27	1555																				
23	MW-28 *	[illegible]																				

GENERAL REMARKS

* Trip Blank (TB317) is included in Sample VOA only

MATRIX CODES

A - AIR
AQ - AQUEOUS
C - COMPLEX
D - DRUM WASTE
OI - OIL
S - SOIL
SL - SLUDGE
W - WIPE
O - OTHER
FB - FIELD BLANK
TB - TRIP BLANK

BOTTLES PREPARED BY	DATE / TIME	BOTTLES REC'D BY	DATE / TIME
SIGNATURE		SIGNATURE	
SAMPLES COLLECTED BY: S.A. Gargiani	DATE / TIME: 3/11/92 1730	RECEIVED IN LAB BY	DATE / TIME
SIGNATURE		SIGNATURE	

REMARKS ON SAMPLE RECEIPT

☐ BOTTLES INTACT ☐ CUSTODY SEALS
☐ PRESERVED ☐ SEALS INTACT
☐ CHILLED ☐ SEE REMARKS

SAMPLE CONTROL COPY

American Environmental Network
200 Monroe Turnpike • Monroe, CT 06468 • 203-261-4458
AEN

CHAIN OF CUSTODY RECORD

 NO.

AEN JOB #:

CLIENT: Rhone Poulenc Inc (Rhodia)

PROJECT ID: R 22345 - Seattle

AEN PROJECT MGR: Eric Johnson

RUSH ☐ YES ☐ NO DUE DATE

						TESTS								GENERAL REMARKS
						Metals Total	VOA	Metals Dissolved	BOD - TDS Alk - SO4 NO2 - NO3	NH3 COD TOC				
						BOTTLE TYPE AND PRESERVATION								
						500 ml Plastic HNO_3	VOA Vial HCl	500 ml plastic HNO_3	1 l Plastic unpres.	500 ml Plastic H_2SO_4				
						FIELD FILTERED - CIRCLE Y or N								
BOTTLE SET #	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX	LAB ID	QC Y / N	Y / N	Y / N	(Y) / N	Y / N	Y / N	Y / N	Y / N	Y / N	SAMPLE REMARKS
24	~~MW-19~~ DM-7	3/18/98 1320 ~~0810~~	W											
25	MW-15	0850												
26	MW-16	0935												
26 MSD	MW-16 MS/MSD	~~1025~~ 0935												
27	MW-17	1025												
27 MSD	MW-17 MS/MSD	1025												
28	H-6	1145												
29	DM-8	1300												
TB	TB318													

MATRIX CODES

A - AIR	S - SOIL
AQ - AQUEOUS	SL - SLUDGE
C - COMPLEX	W - WIPE
D - DRUM WASTE	O - OTHER
OI - OIL	FB - FIELD BLANK
	TB - TRIP BLANK

BOTTLES PREPARED BY	DATE / TIME	BOTTLES REC'D BY	DATE / TIME
SIGNATURE		SIGNATURE	
SAMPLES COLLECTED BY S. Bar...	3/18/98/1640	RECEIVED IN LAB BY	DATE / TIME
SIGNATURE S. B...		SIGNATURE	

REMARKS ON SAMPLE RECEIPT

☐ BOTTLES INTACT ☐ CUSTODY SEALS
☐ PRESERVED ☐ SEALS INTACT
☐ CHILLED ☐ SEE REMARKS

SAMPLE CONTROL COPY

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Company Name: Rhone Poulenc Inc (Rhodia)

Address: CN 5266 Princeton NJ 08543

Proj. Manager: Edwin Liu

Proj. Location: Seattle, WA

Proj. Number:

Phone # : 732-821-3325 Fax # : 732-821-6214

Sampler's signature : _____

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH4, CO, CO2, N2, O2)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
3/18/98	[redacted] 1520	3		H2O	[redacted] DM-7	C						
	0850				MW-15							
	0935				MW-16							
	1025				MW-17							
	1145				MW-6							
	1300				DM-8							

Results to : Edwin Liu, Rhodia Inc. CN 5266, Princeton, NJ 08543-5266

Invoice to : Same

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
[redacted]	Texas Wire	3/18/98	1640				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Company Name: Rhone Poulenc Inc (Rhodia)

Address: CN 5266 Princeton, NJ 08543

Proj. Manager: Edwin Liu

Proj. Location: Seattle, WA

Proj. Number:

Phone # : 732-821-3325 Fax # : 732-821-6014

Sampler's signature : S B

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH4, CO, CO2, N2, O2)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Collection Date	Collection Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
3/11/96	17:00	3		Water	MW-32	C						

Results to : Edwin Liu, Rhodia
CN 5266, Princeton NJ 08543-5666

Invoice to : Same

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
S B	Terradex	3/11/96	1700				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Company Name: Rhone Poulenc Inc. (Rhodia)
Address: CN 5266 Princeton, NJ 08543
Proj. Manager: Edwin Liu
Proj. Location: Seattle, WA
Proj. Number:
Phone # : 732-821-3325 Fax # : 732-821-6214
Sampler's signature : S. B...

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH4, CO, CO2, N2, O2)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
3/17/94	1520	3		Water	[illegible] DM-1	C						
	0905				MW-34							
	1630				MW-23							
	1110				MW-24							
	1255				MW-11							
	1355				MW-25							
	1355				MW-25 Dup							
	1450				MW-26							
	1535				MW-27							
	1635				MW-28							

Results to : Edwin Liu, Rhodia
CN 5266, Princeton, NJ 08543-5666

Invoice to : Same

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
[signature]	Tom Hall	3/17/94	1730				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Company Name: Rhone Poulenc, Inc (Rhodia)
Address: CN 5266, Princeton NJ 08543
Proj. Manager: Edwin Liu
Proj. Location: Seattle, WA
Proj. Number:
Phone # : 732-821-3325 Fax # : 732-821-6214
Sampler's signature : SB

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH4, CO, CO2, N2, O2)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Collection Date	Collection Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
3/15/98	1030	3		Water	B-5	C						
3/15/98	1140	3			B-6	C						
3/16/98	0745	3			MW-18	C						
	0745				MW-18 Dup	C						
	0955				MW-35	C						
	1055				H-9	C						
	1155				MW-30	C						
	1240				MW-29	C						
	1330				H-10	C						
	1435				MW-22	C						
	1525				MW-21	C						
↓	1610	↓		↓	MW-31	C						

Results to : Edwin Liu, Rhodia
CN 5266, Princeton NJ 08543-5666

Invoice to : Same

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
SB	TerraNova	3/16/98	1700				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

Table 1.0
LABORATORY DATA SUMMARY
(Prepared and Supplied by Arcadis, Geraghty & Miller, Seattle, WA)

Table 1a. Groundwater Analytical Results - General Chemistry
Rhodia, Inc., Marginal Way Facility, Tukwila, Washington
Project No. WA000373.0001

DRAFT

Sample ID	Date Sampled	Alkalinity (mg/l)	Ammonia (mg/l)	Biological Oxygen Demand (mg/l)	Chemical Oxygen Demand (mg/l)	Nitrate (mg/l)	Nitrite (mg/l)	Sulfate (mg/l)	Total Dissolved Solids (mg/l)	Total Organic Carbon (mg/l)
B-5	03/15/98	340	.04 U	4.87	94.3	.1 U	.029	25.3	520	23.8
B-6	03/15/98	468	.04 U	7.27	201	.1 U	.061	47.4	600	41.9
DM-7	03/18/98	113.	0.878 N	5.16 N*	17.0 N	.1 UN	0.0760	10.4	148.	1 U
DM-8	03/18/98	734.	4.24 N	25.6 N*	832. N	0.258 N	0.236	191.	1410	25.2
H-10	03/16/98	206	.04 U	49.8	350	.1 U	.043	10 U	284	32.2
H-11	03/17/98	1490	.04 U	19.8	1050	.533	.32	269	2280	188
H-6	03/18/98	180.	.04 UN	2 UN*	111. N	0.371 N	0.0760	20.8	332.	1 U
H-9	03/16/98	230	.04 U	2 U	32.4	.115	.02	80.5	372	9.7
M-18	03/16/98	303	.04 U	53.2	324	.1 U	.026	20.2	442	78.2
M-18 DUP	03/16/98	306	.04 U	36.4	453	.1 U	.029	18.4	424	75.2
MW-15	03/18/98	750.	3.29 N	7.56 N*	549. N	0.300 N	0.311	167.	1310	11.7
MW-16	03/18/98	2660	17.3	11	2160	.303	.54	324	1470	240
MW-17	03/18/98	756.	.04 UN	128. N*	930. N	0.324 N	0.304	186.	1320	18.8
MW-21	03/16/98	738	.04 U	12.1	356	.113	.142	81	1060	77.8
MW-22	03/16/98	240	.04 U	2.49	89.2	.19	.369	42.7	348	32
MW-23	03/17/98	728	.04 U	16.7	394	.167	.208	131	1220	81
MW-24	03/17/98	190	.04 U	2 U	19.5	.1 U	.041	121	424	1 U
MW-25	03/17/98	670.	9.26 N	7.56 N*	758. N	1.23 N	1.19	215.	1520	20.4
MW-25 DUP	03/17/98	682.	8.69 N	11.2 N*	763. N	0.299 N	0.402	206.	1460	20.5
MW-26	03/17/98	850.	7.76 N	2 UN*	549. N	0.194 N	0.227	142.	1480	14.5
MW-27	03/17/98	1540	.04 UN	5.19 N*	969. N	0.526 N	0.648	247.	2640	18.4
MW-28	03/17/98	2240	0.197 N	14.8 N*	149. N	.1 UN	0.0290	36.3	3500	33.7
MW-29	03/16/98	205	.04 U	5.49	10 U	.1 U	.03	10 U	261	1 U
MW-30	03/16/98	575	.04 U	14.5	146	.1 U	.054	48.6	840	40.8
MW-31	03/16/98	975	.4 U	7.89	356	.678	.153	127	1190	78
MW-32	03/16/98	395	.04 U	6.69	115	.1 U	.036	27.8	525	41.6
MW-33	03/17/98	766	2.38	7.56	343	.134	.158	95.3	1310	111
MW-34	03/17/98	156	.04 U	11.8	22.1	.1 U	.019	15.5	238	1 U
MW-35	03/16/98	550	.04 U	6.52	96.9	.1 U	.038	52.2	734	27.3

Note: Samples were analyzed by American Environmental Network of Monroe, Connecticut.
* Associated duplicate analysis was not within control limits.
mg/L Milligrams per liter.
N Associated spike recovery was not within control limits.
U Analyte was not detected at the associated method reporting limit.

g:/aproject/rhodia/3730001/data/gwdata/datasum.xls/gen chem

Table 1b. Groundwater Analytical Results - Dissolved Metals
Rhodia, Inc., Marginal Way Facility, Tukwila, Washington
Project No. WA000373.0001

Sample ID	Date Sampled	Dissolved Arsenic (ug/L)	Dissolved Cadmium (ug/L)	Dissolved Chromium (ug/L)	Dissolved Copper (ug/L)	Dissolved Iron (ug/L)	Dissolved Lead (ug/L)	Dissolved Manganese (ug/L)	Dissolved Mercury (ug/L)	Dissolved Nickel (ug/L)	Dissolved Selenium (ug/L)	Dissolved Thallium (ug/L)	Dissolved Vanadium (ug/L)	Dissolved Zinc (ug/L)
B-5	03/15/98	5.4 B	1.0 U	12.3	7.1 B	7770 E	1.4 B	249.	0.20 UN	3.7 B	2.0 U	2.0 U	81.4	3.2 B*
B-6	03/15/98	3.4 B	1.0 U	13.0	15.8 B	23600 E	2.6 B	459.	0.20 UN	3.5 B	3.0 B	2.0 U	74.6	17.4 B*
DM-7	03/18/98	12.3	1.0 U	1.8 B	2.3 B	35800	7.3 N	1850	0.20 U	3.4 B	3.4 B	2.0 U	9.7 B	7.8 B
DM-8	03/18/98	38.1	1.0 U	85.5	125.	55600	19.6 N	3990	0.20 U	6.0 B	8.3	2.0 U	747.	13.7 B
H-10	03/16/98	10.5	1.0 U	2.4 B	6.0 B	28200 E	2.3 B	1080	0.20 UN	9.4 B	2.0 U	2.0 U	15.9 B	4.7 B*
H-11	03/17/98	52.5	1.0 U	80.8	52.4	51000 E	10.2	1470	0.20 UN	7.9 B	5.0	2.0 U	623.	12.2 B*
H-6	03/18/98	12.3	1.0 U	20.8	77.6	6210	4.1 N	47.3	0.59	6.4 B	2.8 B	2.0 U	33.1 B	9.5 B
H-9	03/16/98	7.6 B	1.2 B	4.2 B	71.2	639. E	1.0 U	393.	0.20 UN	5.7 B	2.0 U	2.0 U	29.5 B	16.3 B*
M-18	03/16/98	13.0	1.0 U	3.6 B	7.3 B	12100 E	1.4 B	1850	0.20 UN	5.8 B	2.0 U	2.0 U	16.7 B	3.0 U*
M-18 DUP	03/16/98	14.0	1.0 U	4.4 B	7.2 B	14100 E	1.4 B	2030	0.20 UN	5.8 B	3.3 B	2.0 U	19.9 B	17.9 B*
MW-15	03/18/98	12.0	1.0 U	62.2	22.1 B	34400	7.3 N	1810	0.20 U	6.8 B	5.6	2.0 U	514.	10.8 B
MW-16	03/18/98	49.5	2.9 B	249.	220.	4440 E	11.4	83.7	0.20 UN	36.6 B	11.9	2.0 U	1670	83.4 *
MW-17	03/18/98	74.2	1.0 U	75.8	89.4	33500	50.5 N	2760	0.20 U	7.5 B	5.7	2.0 U	674.	19.9 B
MW-21	03/16/98	5.4 B	1.0 U	35.1	5.0 B	23600 E	2.1 B	1070	0.20 UN	4.3 B	2.8 B	2.0 U	218.	25.5 *
MW-22	03/16/98	38.5	1.0 U	4.7 B	1.4 B	80400 E	6.7	6700	0.20 UN	6.6 B	6.5	2.0 U	26.2 B	29.2 *
MW-23	03/17/98	4.3 B	1.0 U	39.0	8.6 B	41300 E	3.2	2770	0.20 UN	5.7 B	4.9 B	2.0 U	244.	13.7 B*
MW-24	03/17/98	3.6 B	1.0 U	7.9 B	37.8	5430 E	1.5 B	437.	0.20 UN	6.5 B	2.0 U	2.0 U	33.7 B	7.8 B*
MW-25	03/17/98	136.	1.0 U	109.	419.	57000	46.5 N	2340	0.54	17.9 B	10.4	2.0 U	832.	32.4
MW-25 DUP	03/17/98	118.	1.0 U	95.9	337.	48800	38.9 N	2100	0.49	15.7 B	9.4	2.0 U	732.	31.3
MW-26	03/17/98	10.7	1.0 U	56.1	21.3 B	30300	10.6 N	1840	0.20 U	6.7 B	5.5	2.0 U	406.	13.4 B
MW-27	03/17/98	86.4	3.5 B	114.	108.	11300	14.0 N	434.	0.20 U	19.6 B	6.7	2.0 U	597.	35.0
MW-28	03/17/98	15.5	9.9	11.6	93.8	6360	1.0 UN	269.	0.20 U	31.0 B	12.9	2.0 U	91.7	9.9 B
MW-29	03/16/98	12.9	1.0 U	1.5 B	1.0 U	14100 E	1.0 U	1680	0.20 UN	4.8 B	2.3 B	2.0 U	4.8 B	3.4 B*
MW-30	03/16/98	2.0 U	1.0 U	11.2	2.6 B	17500 E	1.4 B	858.	0.20 UN	4.9 B	2.3 B	2.0 U	55.4	5.8 B*
MW-31	03/16/98	49.9	1.0 U	46.8	33.2	32300 E	7.8	1270	0.34 N	5.9 B	3.2 B	2.0 U	406.	20.4 *
MW-32	03/16/98	3.6 B	1.0 U	15.0	6.3 B	6970 E	1.1 B	318.	0.20 UN	3.5 B	2.0 U	2.0 U	110.	10.4 B*
MW-33	03/17/98	3.2 B	1.0 U	34.0	12.8 B	21000 E	1.8 B	694.	0.20 UN	4.6 B	3.1 B	2.0 U	184.	14.8 B*
MW-34	03/17/98	6.0 B	1.0 U	1.0 U	1.3 B	20400 E	1.5 B	531.	0.20 UN	4.4 B	2.0 U	2.0 U	3.6 B	3.2 B*
MW-35	03/16/98	3.3 B	1.0 U	6.9 B	1.8 B	44000 E	4.0	2730	0.20 UN	4.8 B	2.9 B	2.0 U	43.0 B	14.4 B*

Note: Samples were analyzed by American Environmental Network of Monroe, Connecticut.
* Associated duplicate analysis was not within control limits.
B Analyte result is between the instrument detection limit and the contract requrired detection limit.
E Reported value is estimated because of the presence of interference.
N Associated spike recovery was not within control limits.
U Analyte was not detected at the associated method reporting limit.
ug/L Micrograms per liter.

g:/aproject/rhodia/3730001/data/gwdata/datasum.xls/dissolved metals

Table 1c. Groundwater Analytical Results - Total Metals
Rhodia, Inc., Marginal Way Facility, Tukwila, Washington
Project No. WA000373.0001

Sample ID	Dated Sampled	Total Arsenic (ug/L)	Total Cadmium (ug/L)	Total Chromium (ug/L)	Total Copper (ug/L)	Total Iron (ug/L)	Total Lead (ug/L)	Total Manganese (ug/L)	Total Mercury (ug/L)	Total Nickel (ug/L)	Total Selenium (ug/L)	Total Thallium (ug/L)	Total Vanadium (ug/L)	Total Zinc (ug/L)
B-5	03/15/98	2.8 B	1.0 U	11.7	5.1 B	7420 E	1.3 B	212.	0.20 UN	3.5 B	2.6 B	2.0 U	74.2	9.9 B*
B-6	03/15/98	4.8 B	1.0 U	14.1	11.5 B	24200 E	2.3 B	482.	0.20 UN	4.4 B	3.6 B	2.0 U	77.0	16.2 B*
DM-7	03/18/98	12.6	1.0 U	1.7 B	1.8 B	39400	5.1 N	2030	0.20 U	3.5 B	5.8	2.0 U	6.4 B	5.6 B
DM-8	03/18/98	38.9	1.0 U	84.8	128.	55600	17.2 N	3950	0.20 U	6.6 B	10.2	2.0 U	738.	15.7 B
H-10	03/16/98	11.8	1.0 U	1.5 B	3.5 B	38700 E	2.9 B	1340	0.20 UN	9.8 B	2.3 B	2.0 U	7.3 B	6.2 B*
H-11	03/17/98	49.3	1.0 U	77.8	51.3	49400 E	10.7	1400	0.20 UN	8.1 B	5.7	2.0 U	599.	20.7 *
H-6	03/18/98	14.6	1.0 U	27.9	83.2	9290	7.0 N	91.1	0.59	8.5 B	4.1 B	2.0 U	37.7 B	17.2 B
H-9	03/16/98	5.5 B	1.4 B	2.7 B	54.3	555. E	1.2 B	361.	0.20 UN	5.8 B	2.0 U	2.0 U	13.7 B	22.0 *
M-18	03/16/98	10.8	1.0 U	4.0 B	9.5 B	12500 E	1.4 B	1880	0.20 UN	5.8 B	2.0 U	2.0 U	20.1 B	3.0 U*
M-18 DUP	03/16/98	12.5	1.0 U	3.7 B	8.5 B	11900 E	1.6 B	1760	0.20 UN	5.5 B	2.2 B	2.0 U	16.7 B	4.0 B*
MW-15	03/18/98	10.6	1.0 U	62.5	22.0 B	34800	5.7 N	1800	0.20 U	6.3 B	5.9	2.0 U	516.	9.9 B
MW-16	3/18/98	54.0	2.6 B	237.	223.	4670 E	15.1	88.6	0.20 UN	36.1 B	10.5	2.0 U	1760	37.0 *
MW-17	03/18/98	82.7	1.0 U	87.8	102.	38600	15.3 N	2960	0.20 U	8.7 B	6.7	2.0 U	685.	25.0
MW-21	03/16/98	5.1 B	1.0 U	40.6	7.0 B	27400 E	3.6	1090	0.20 UN	6.0 B	3.0 B	2.0 U	255.	22.2 *
MW-22	03/16/98	45.1	1.0 U	5.5 B	2.9 B	96100 E	8.9	7710	0.20 UN	6.6 B	9.0	2.0 U	32.1 B	12.4 B*
MW-23	03/17/98	5.8 B	1.0 U	43.5	9.6 B	48300 E	4.4	3160	0.20 UN	5.5 B	3.8 B	2.0 U	285.	24.6 *
MW-24	03/17/98	4.8 B	1.0 U	6.1 B	43.9	3920 E	2.8 B	192.	0.20 UN	8.1 B	2.2 B	2.0 U	14.4 B	16.9 B*
MW-25	03/17/98	142.	1.0 U	113.	498.	62300	57.4 N	2430	0.70	19.9 B	10.9	2.0 U	856.	39.1
MW-25 DUP	03/17/98	136.	1.0 U	110.	474.	60500	56.9 N	2350	0.70	19.2 B	11.1	2.0 U	842.	39.6
MW-26	03/17/98	7.9 B	1.0 U	55.6	17.0 B	31800	3.2 N	1920	0.20 U	6.2 B	5.3	2.0 U	383.	13.6 B
MW-27	03/17/98	87.6	3.6 B	119.	115.	13100	14.7 N	440.	0.20 U	20.0 B	7.7	2.0 U	606.	39.0
MW-28	03/17/98	15.9	10.3	11.9	115.	6880	3.8 N	284.	0.20 U	30.9 B	14.0	2.0 U	93.4	11.9 B
MW-29	03/16/98	12.5	1.0 U	1.2 B	1.3 B	14000 E	1.2 B	1650	0.20 UN	4.7 B	2.0 U	2.0 U	2.0 B	9.3 B*
MW-30	03/16/98	2.0 U	1.0 U	11.1	3.4 B	17800 E	1.5 B	846.	0.20 UN	4.4 B	3.6 B	2.0 U	56.6	8.9 B*
MW-31	03/16/98	53.4	1.0 U	50.0	36.5	35300 E	8.8	1310	0.29 N	6.2 B	3.4 B	2.0 U	429.	23.6 *
MW-32	03/16/98	2.1 B	1.0 B	14.4	7.3 B	6920 E	2.3 B	286.	0.20 UN	3.7 B	2.0 U	2.0 U	100.	11.1 B*
MW-33	03/17/98	7.0 B	1.0 U	34.1	7.3 B	20800 E	1.2 B	639.	0.20 UN	4.9 B	3.2 B	2.0 U	184.	19.5 B*
MW-34	03/17/98	6.4 B	1.0 U	3.6 B	5.7 B	22100 E	3.8	521.	0.20 UN	5.6 B	3.2 B	2.0 U	6.1 B	10.5 B*
MW-35	03/16/98	2.0 U	1.0 U	3.4 B	1.5 B	18800 E	1.0 U	1120	0.20 UN	2.0 B	2.0 U	2.0 U	18.8 B	6.5 B*

Note: Samples were analyzed by American Environmental Network of Monroe, Connecticut.
* Associated duplicate analysis was not within control limits.
B Analyte result is between the instrument detection limit and the contract requrired detection limit.
E Reported value is estimated because of the presence of interference.
N Associated spike recovery was not within control limits.
U Analyte was not detected at the associated method reporting limit.
ug/L Micrograms per liter.

g:/aproject/rhodia/3730001/data/gwdata/datasum.xls/total metals

Table 1d. Groundwater Analytical Results - Toluene
Rhodia, Inc., Marginal Way Facility, Tukwila, Washington
Project No. WA000373.0001

Sample ID	Date Sampled	Toluene (ug/L)
B-5	03/15/98	5 U
B-6	03/15/98	5 U
DM-7	03/18/98	3 J
DM-8	03/18/98	5 U
H-10	03/16/98	340000
H-11	03/17/98	360000
H-6	03/18/98	3 J
H-9	03/16/98	5 U
M-18	03/16/98	380000
M-18 DUP	03/16/98	390000
MW-15	03/18/98	1900
MW-16	03/18/98	660
MW-17	03/18/98	190000
MW-21	03/16/98	5 U
MW-22	03/16/98	5 U
MW-23	03/17/98	2 J
MW-24	03/17/98	5 U
MW-25	03/17/98	5 U
MW-25 DUP	03/17/98	5 U
MW-26	03/17/98	5 U
MW-27	03/17/98	5 U
MW-28	03/17/98	2200
MW-29	03/16/98	2 J
MW-30	03/16/98	5 U
MW-31	03/16/98	5 U
MW-32	03/16/98	5 U
MW-33	03/17/98	5 U
MW-34	03/17/98	5 U
MW-35	03/16/98	5 U
TB 3/16/98	03/16/98	5 U
TB 3/17/98	03/17/98	5 U
TB 3/18/98	03/18/98	5 U

Note: Samples were analyzed by American Environmental Network of Monroe, Connecticut.
J The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.
U The compound was not detected.
ug/L Micrograms per liter.

g:/aproject/rhodia/3730001/data/gwdata/datasum.xls/toluene

Table 2.0
FIELD DATA SUMMARY
(Prepared by Terra Nova Associates)

RHONE-POULENC, SEATTLE, WA FACILITY
GROUNDWATER SAMPLING EVENT, 3/15/98 - 3/18/98
MICRO-PURGING DATA
TABLE 2.0

Well #	MW-35	DM-7	DM-8	MW-34	MW-33	B-5	B-6	MW-32	MW-31	MW-30	H-10	H-11
DTW, Initial (ft.)	**12.15**	**12.96**	**15.65**	**11.66**	**11.92**	**10.44**	**11.85**	**12.29**	**12.16**	**11.87**	**13.03**	**12.53**
Total Depth (ft.)	35	30.8	36	20.5	35.5	22.7	23	36	19.5	35.5	20	20
Depth to Product (ft.)	---	---	---	---	---	---	---	---	---	---	12.49	---
Avg. WL Drop During Prg. (ft.)	0.05	0.07	0.10	0.01	0.02	0.00	0.2	0.01	0.00	0.10	0.04	0.00
DTW @ Sampling (ft.)	12.26	12.96	15.85	11.68	11.93	10.44	12.11	12.31	12.16	12.04	13.09	12.53
Purge Rate (ml/min)	190	214	175	200	200	200	150	280	240	230	240	200
Initial Purge Time	0848	1420	1155	0805	0705	0940	1045	1615	1535	1105	1250	1150
Initial Purge Volume (L)	2.7	2.5	2.8	2.5	2.8	2.5	2.5	2.8	2.5	2.8	2.4	2.5
Time Micro-purge Begins	0905	1432	1208	0818	0755	0952	1055	1626	1544	1116	1300	1200
Volume Micro-purged (L)	9.4	9.0	8.4	8.4	7.2	6.0	6.0	8.4	4.8	8.4	6.0	6.0
Date Sampled	3/16	3/18	3/18	3/17	3/17	3/15	3/15	3/16	3/16	3/16	3/16	3/17
Time Sampled	0955	1520	1300	0905	0755	1030	1140	1700	1610	1155	1330	1235
Field Parameters:												
pH	6.64	6.63	6.77	6.13	6.82	6.68	6.92	6.59	6.99	6.73	6.63	6.84
Turbidity (NTU)	49	10	10	30	77*	9	14	47	58	16	11	10
SCOND µm/cm	1210	883	1440	313	1840	665	683	611	1850	1370	663	2830
Temp (^{0}C)	13.5	13.7	15.2	12.0	13.5	14.0	14.0	13.9	13.7	14.0	13.4	14.9
Dissolved Oxygen (ppm)	0.23	0.25	0.00	0.14	0.03	0.32	0.13	0.19	0.00	0.11	0.14	0.12
Salinity (%)	0.05	0.03	0.06	0.01	0.08	0.02	0.04	0.02	0.08	0.06	0.03	0.04
ORP (+/-mv)	-113	-93	-91	-6	-93	-191	-204	-60	-15	-140	-83	-102
Ferrous Iron (mg/L)	3.75	8.82	2.54	8.58	3.18	4.02	4.32	3.18	2.42	5.25	9.13	1.72

* Significant interference expected due to extremely dark color of sample. Measurements were stable and consistent, however.

(1) Dilution method utilized.

ARCADIS GERAGHTY&MILLER

January 7, 1998

Ms. Sylvia Burges
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

RE: Geoprobe™ Groundwater Sampling Report
RPI Marginal Way Facility, Tukwila, Washington

Dear Ms. Burges:

Please find enclosed three copies of the Geoprobe™ Groundwater Sampling report, which documents the groundwater sampling conducted at the RPI Marginal Way Facility between November 18 and 21, 1997. This information was presented to the U.S. EPA during our meeting on December 15, 1997.

The Geoprobe™ groundwater sampling data will be used to support selection of appropriate locations for additional groundwater monitoring wells and to support design of the proposed Interim Measures (IM) system. The proposed groundwater monitoring well locations will be presented in a Groundwater Monitoring Plan, currently in preparation.

Please call Mr. Edwin Liu of Rhodia (formerly Rhône-Poulenc) at 732-821-3325 with any questions regarding this document.

Sincerely,

Jay P. Bower, P.E.
Senior Engineer/Project Manager

Ronald E. Topazio, P.E.
Regional Manager/Project Officer

cc: Byung Maeng, Department of Ecology (1 copy)

GEOPROBE™ GROUNDWATER SAMPLING
NOVEMBER 18-21, 1997

RPI Marginal Way Facility
Tukwila, Washington

Project No. WA000373.0001

January 1998

Prepared for

Rhodia Inc.
(formerly Rhône-Poulenc Inc.)
Black Horse Lane
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Prepared by

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GEOPROBE™ GROUNDWATER SAMPLING
NOVEMBER 18-21, 1997

RPI Marginal Way Facility
Tukwila, Washington

Project No. WA000373.0001

January 7, 1998

Prepared by GERAGHTY & MILLER, INC.

Jay P. Bower, P.E.
Senior Engineer/Project Manager

Ronald E. Topazio, P.E.
Northwest Regional Manager

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FIGURES

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GEOPROBE™ GROUNDWATER SAMPLING
NOVEMBER 18-21, 1997

RPI Marginal Way Facility
Tukwila, Washington

INTRODUCTION

This report documents the groundwater sampling and analysis activities conducted at the RPI Marginal Way Facility located in Tukwila, Washington during the period November 18 through 21, 1997. Rhodia Inc. (formerly Rhône-Poulenc Inc.) contracted with Transglobal Environmental Geosciences Northwest, Inc. (TEG) to provide groundwater sampling and on-site analytical laboratory services. Geraghty & Miller was contracted to provide oversight and consult with the on-site Rhodia representative(s) during execution of these activities.

The purpose of the groundwater sampling and analysis event was to characterize the lateral and vertical distribution of toluene concentrations in the uppermost aquifer to support: (1) selection of appropriate locations for additional groundwater monitoring wells and (2) design of the proposed Interim Measures (IM) air sparging/biosparging system.

GROUNDWATER SAMPLING METHODS

Groundwater samples were collected by TEG using two direct-push methods, Geoprobe™ and Strataprobe™. Both methods allow collection of groundwater samples at selected depths from a temporary well screen attached to hollow steel rods. Specifications for this sampling equipment, provided by TEG, are included as Appendix A. In both methods, the screen interval is shielded by the leading section of steel rod as the rod is advanced. Upon reaching the sampling depth, the rod is pulled back, thereby exposing the screen section and allowing collection of a groundwater sample at the target depth. Although both Geoprobe™ and Strataprobe™ sampling tools were utilized during this sampling effort, the term "Geoprobe™

sampling" in this document will refer to the collective use of Geoprobe™ and Strataprobe™ sampling equipment[1].

At each sampling location, the temporary well screen was driven to the selected sampling depth and a groundwater sample was collected via clean tubing and a peristaltic pump and transferred directly to a 40 milliliter (ml) glass vial. Several depths were sampled at each sampling location. Co-located samples (i.e., samples collected at multiple depths at the same areal location) were collected from adjacent boreholes (one borehole per sample) to reduce the potential for cross-contamination between sampling depths. The sampling equipment was extracted from the borehole following collection of each sample and was decontaminated prior to collecting the next sample. Decontamination procedures are described in the following section.

In addition to Geoprobe™ sampling, two groundwater samples were collected from Well DM-8 using clean tubing and a peristaltic pump. These samples were collected to provide a qualitative basis of comparison with previous groundwater sampling data.

TEG analyzed the groundwater samples for toluene concentrations using USEPA Method 8020 (gas chromatography), in an on-site mobile laboratory. The groundwater samples were not filtered prior to analysis. Analytical results for samples collected at each location were evaluated in the field to select subsequent sampling locations.

Standard chain-of-custody procedures were followed for transfer of the samples from the sampling location to the on-site laboratory. Chain-of-Custody forms documenting sample possession from collection through analysis are provided in Appendix B. Samples were transferred from the sampling location to the onsite laboratory immediately following collection.

[1] As shown in the specifications provided in Appendix A, Geoprobe™ and Strataprobe™ equipment are similar in design and operation. Both methods were utilized during this sampling event to shorten the sampling time-frame, thereby providing a temporally consistent data set, within the constraints of equipment availability.

EQUIPMENT DECONTAMINATION

Clean disposable tubing was used for each sample collected, therefore no decontamination of this component was required. The Geoprobe™ and Strataprobe™ sampling devices and steel rod were cleansed in a 3-step process between each sample collection. Each component to be decontaminated was scrubbed with a laboratory-grade detergent solution and rinsed twice with potable water.

QUALITY ASSURANCE

TEG employed the following procedures to ensure high quality results:

- Check standards were run at the beginning and end of each day. Both standards were required to be within 15% of the continuing calibration curve value.
- All samples were prepared with a surrogate spike. The recovery rates were required to be within the range of 65% to 135% of the known value unless high toluene concentrations in the sample interfered with the determination of the recovery rate.
- At least one method blank was run per day.
- Duplicate analyses were performed on 10 of a total of 89 samples collected (approximately 11 percent).

SAMPLING LOCATIONS

Groundwater sampling locations for the subject event are shown on Figure 1. As mentioned previously, analysis by an on-site laboratory allowed real-time selection of subsequent sampling locations, based on analytical results. Initial sampling locations were selected based on the October 1997 sampling round date for existing wells. Groundwater characterization performed during the RFI (CH2M Hill 1995) had identified a toluene plume, inland from the Waterway, as shown on Figure 1. The focus of the Geoprobe™ groundwater sampling was to

characterize the concentration distribution within the upper aquifer along the Waterway and between the Waterway and the previously-defined plume.

Groundwater samples were collected at several discrete depths at each sampling location to characterize the vertical concentration distribution within the upper aquifer. In general, three to four samples were collected at each location at the following depths: near the water table, 10 to 15 feet below the water table, 20 to 25 feet below the water table, and 30 to 35 feet below the water table. Deviations from this pattern were due to poor recharge at certain depths. Under conditions of poor recovery sampling was attempted above or below the target depth. The sampling depths for each location are provided in Table 1.

RESULTS

Analytical results for toluene concentrations in the groundwater samples are summarized in Table 1; the report from TEG is provided as Appendix C. The lateral and vertical distribution of toluene concentrations between the source area and the Waterway are depicted in Figure 2, and Figures 4 through 9. Figure 2 illustrates the lateral distribution of dissolved toluene concentrations in the upper aquifer, around the periphery of the previously defined plume area based on the highest concentrations observed at each location. Figures 4 through 9 illustrate the vertical distribution of dissolved toluene concentrations within the upper aquifer along various cross-sections. The spatial locations of the cross sections are shown on Figure 3.

The following summarizes the evaluation of the Geoprobe™ sampling data. All samples were collected around the periphery of the previously-defined plume area and between this area and the Waterway. No samples were collected from within the previously-defined plume area.

- The highest measured toluene concentrations were observed near the previously-defined plume, with concentrations generally decreasing with distance from this area (Figure 2).

- The highest toluene concentrations beyond the previously-defined plume were measured in samples collected at Geoprobe™ sampling locations GP-4 and GP-8, which are between the source area and Well DM-8 (Figures 2 and 6).
- Toluene concentrations in groundwater samples collected within the upper 10 feet of the aquifer were generally less than 10 µg/L and were all below 100 µg/L (Table 1 and Figures 4 through 9).
- Toluene concentrations in groundwater samples collected at depths greater that 25 feet below the water table were all less than 300 µg/L (Table 1).
- Based on the Geoprobe™ sampling, the highest dissolved toluene concentrations occurred between approximately 10 and 25 feet below the water table (Table 1 and Figures 4 through 9).
- No light non-aqueous phase liquid (LNAPL) was encountered at any of the Geoprobe™ sampling locations.

Analytical results for groundwater samples collected from Well DM-8 are relatively consistent with the October 1997 groundwater monitoring results. However, the reported concentrations are significantly higher than the concentrations measured in samples collected at Geoprobe™ sampling location GP-1, suggesting the potential for preferential pathways for groundwater flow in the upper aquifer.

Based on the results of the Geoprobe™ groundwater sampling, the general direction of plume migration appears to be from the previously-defined plume area toward the west, as shown on Figure 2. As discussed in the Introduction, the Geoprobe™ groundwater sampling data will be used to support selection of appropriate locations for additional groundwater monitoring wells and to support design of the proposed Interim Measures (IM) air sparging/biosparging system. The proposed groundwater monitoring well locations will be presented in a Groundwater Monitoring Plan, currently in preparation. The IM system design will be presented in the IM Implementation Workplan, to be prepared following completion of the IM pilot test, as described in the IM Workplan (Geraghty & Miller 1997).

REFERENCES

CH2M Hill. 1995. RCRA Facility Investigation (RFI) Report for the Marginal Way Facility, Tukwila, Washington. June 1995.

Geraghty & Miller. 1997. Interim Measures Workplan, Rhone-Poulenc Inc., Tukwila, Washington. Draft dated November 1997.

TABLES

TABLES

Table 1. Analytical Results
Geoprobe™ Sampling Event
November 18-21, 1997
Rhone-Poulenc Marginal Way Facility
Tukwila, Washington

Sample ID	Date Collected	Sampling Depth (ft bls)	Approx. Surface Elevation (ft NGVD)	Approx. Sampling Elevation (ft NGVD)	Measured Toluene Concentration (ug/L)
GP-1-1	18-Nov	21	17	-4	nd
GP-1-2	18-Nov	31	17	-14	36
GP-1-2Dup	18-Nov	31	17	-14	33
GP-1-3	18-Nov	41	17	-24	nd
GP-1-4	18-Nov	51	17	-34	nd
GP-2-1	18-Nov	21	17	-4	nd
GP-2-2	18-Nov	31	17	-14	41
GP-2-3	18-Nov	41	17	-24	nd
GP-2-4	18-Nov	48	17	-31	nd
GP-3-1	18-Nov	16	15	-1	2
GP-3-2	18-Nov	26	15	-11	4
GP-3-2Dup	18-Nov	26	15	-11	4
GP-3-3	18-Nov	36	15	-21	2,770
GP-3-4	18-Nov	41	15	-26	6
GP-4-1	18-Nov	16	15	-1	nd
GP-4-2	18-Nov	26	15	-11	174,000
GP-4-3	18-Nov	36	15	-21	178
GP-4-4	18-Nov	46	15	-31	127
GP-5-1	19-Nov	15	15	0	nd
GP-5-2	19-Nov	26	15	-11	nd
GP-5-3	19-Nov	36	15	-21	306
GP-5-4	19-Nov	46	15	-31	3
GP-6-1	19-Nov	16	15	-1	3
GP-6-1Dup	19-Nov	16	15	-1	4
GP-6-2	19-Nov	26	15	-11	2,150
GP-6-3	19-Nov	36	15	-21	8
GP-7-1	19-Nov	21	17	-4	nd
GP-7-2	19-Nov	31	17	-14	2
GP-7-3	19-Nov	41	17	-24	4
GP-7-4	19-Nov	51	17	-34	3
GP-8-1	19-Nov	16	15	-1	nd
GP-8-2	19-Nov	26	15	-11	100,000
GP-8-3	19-Nov	36	15	-21	62
GP-8-3Dup	19-Nov	36	15	-21	63
GP-8-4	19-Nov	44	15	-29	5

Table 1. Analytical Results
Geoprobe™ Sampling Event
November 18-21, 1997
Rhone-Poulenc Marginal Way Facility
Tukwila, Washington

Sample ID	Date Collected	Sampling Depth (ft bls)	Approx. Surface Elevation (ft NGVD)	Approx. Sampling Elevation (ft NGVD)	Measured Toluene Concentration (ug/L)
GP-9-1	19-Nov	16	15	-1	5
GP-9-2	19-Nov	26	15	-11	5,400
GP-9-3	19-Nov	36	15	-21	190
GP-9-4	19-Nov	46	15	-31	8
GP-10-1	19-Nov	16	15	-1	nd
GP-10-2	19-Nov	26	15	-11	nd
GP-10-3	19-Nov	36	15	-21	nd
GP-10-3Dup	19-Nov	36	15	-21	nd
GP-10-4	19-Nov	41	15	-26	13
GP-11-1	20-Nov	16	15	-1	1
GP-11-1Dup	20-Nov	16	15	-1	1
GP-11-2	20-Nov	26	15	-11	3
GP-11-3	20-Nov	36	15	-21	37
GP-11-4	20-Nov	41	15	-26	1
GP-12-1	20-Nov	16	15	-1	64
GP-12-2	20-Nov	26	15	-11	312
GP-12-3	20-Nov	36	15	-21	ns
GP-12-4	20-Nov	41	15	-26	17
GP-13-1	20-Nov	20	17	-3	nd
GP-13-2	20-Nov	30	17	-13	3
GP-13-3	20-Nov	41	17	-24	nd
GP-13-4	20-Nov	51	17	-34	nd
GP-13-4Dup	20-Nov	51	17	-34	nd
GP-14-1	20-Nov	16	14	-2	2
GP-14-2	20-Nov	26	14	-12	3
GP-14-3	20-Nov	36	14	-22	4
GP-15-1	20-Nov	16	13	-3	nd
GP-15-2	20-Nov	26	13	-13	nd
GP-15-3	20-Nov	36	13	-23	2
GP-15-4	20-Nov	46	13	-33	256
GP-15-4Dup	20-Nov	46	13	-33	200
GP-16-1	20-Nov	16	14.5	-1.5	1
GP-16-2	20-Nov	26	14.5	-11.5	nd
GP-16-3	20-Nov	36	14.5	-21.5	1
GP-16-4	20-Nov	46	14.5	-31.5	2

Table 1. Analytical Results
Geoprobe™ Sampling Event
November 18-21, 1997
Rhone-Poulenc Marginal Way Facility
Tukwila, Washington

Sample ID	Date Collected	Sampling Depth (ft bls)	Approx. Surface Elevation (ft NGVD)	Approx. Sampling Elevation (ft NGVD)	Measured Toluene Concentration (ug/L)
GP-17-1	20-Nov	16	14	-2	7
GP-17-2	20-Nov	26	14	-12	114
GP-17-3	21-Nov	36	14	-22	1
GP-18-1	21-Nov	16	14	-2	1
GP-18-1Dup	21-Nov	16	14	-2	1
GP-18-2	21-Nov	26	14	-12	1
GP-18-3	21-Nov	36	14	-22	nd
GP-18-4	21-Nov	46	14	-32	5
GP-19-1	21-Nov	16	14.5	-1.5	nd
GP-19-2	21-Nov	26	14.5	-11.5	nd
GP-19-3	21-Nov	36	14.5	-21.5	1
GP-19-4	21-Nov	46	14.5	-31.5	3
GP-20-1	21-Nov	16	14	-2	1
GP-20-2	21-Nov	26	14	-12	1
GP-20-2Dup	21-Nov	26	14	-12	1
GP-20-3	21-Nov	36	14	-22	nd
GP-20-4	21-Nov	46	14	-32	3
DM-8-23	20-Nov	23	17	-6	9,110
DM-8-33	20-Nov	33	17	-16	572

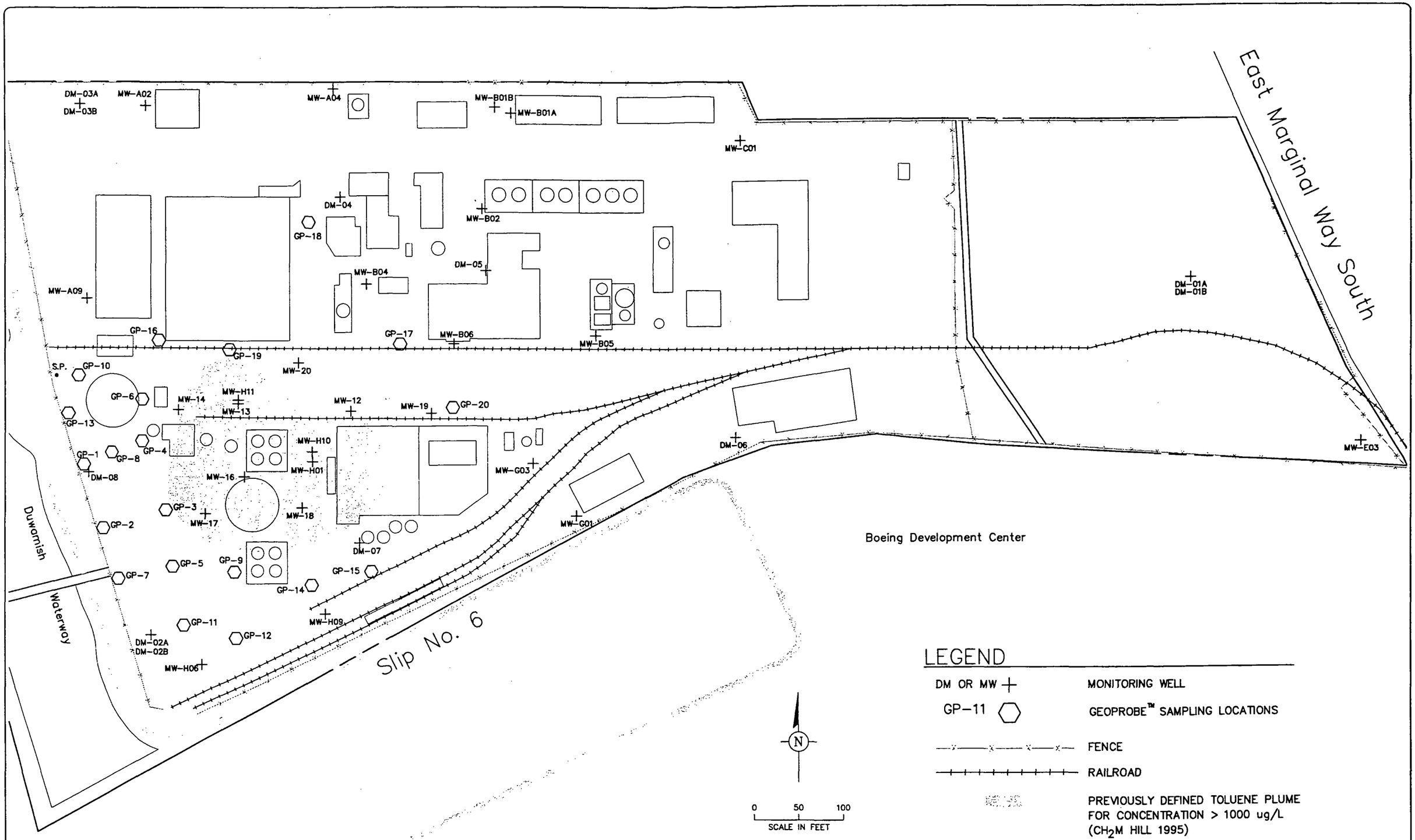
ft	feet
bls	below land surface
NGVD	relative to National Geodetic Vertical Datum of 1929
GP	indicates Geoprobe™ sample
DM	indicates sample collected from well DM-8

Project No. WA000373.0001.00001

g:\aproject\rhonep\docs\table1.xls

FIGURES

FIGURES



Boeing Development Center

LEGEND

- DM OR MW + — MONITORING WELL
- GP-11 ⬡ — GEOPROBE™ SAMPLING LOCATIONS
- —x—x—x—x— FENCE
- RAILROAD
- PREVIOUSLY DEFINED TOLUENE PLUME FOR CONCENTRATION > 1000 ug/L (CH_2M HILL 1995)

8330 154TH AVE. NE
REDMOND, WASHINGTON 98052-3684
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GERAGHTY & MILLER, INC.
Environmental Services
A Halliburton Company

SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE REPRODUCTION SCALE

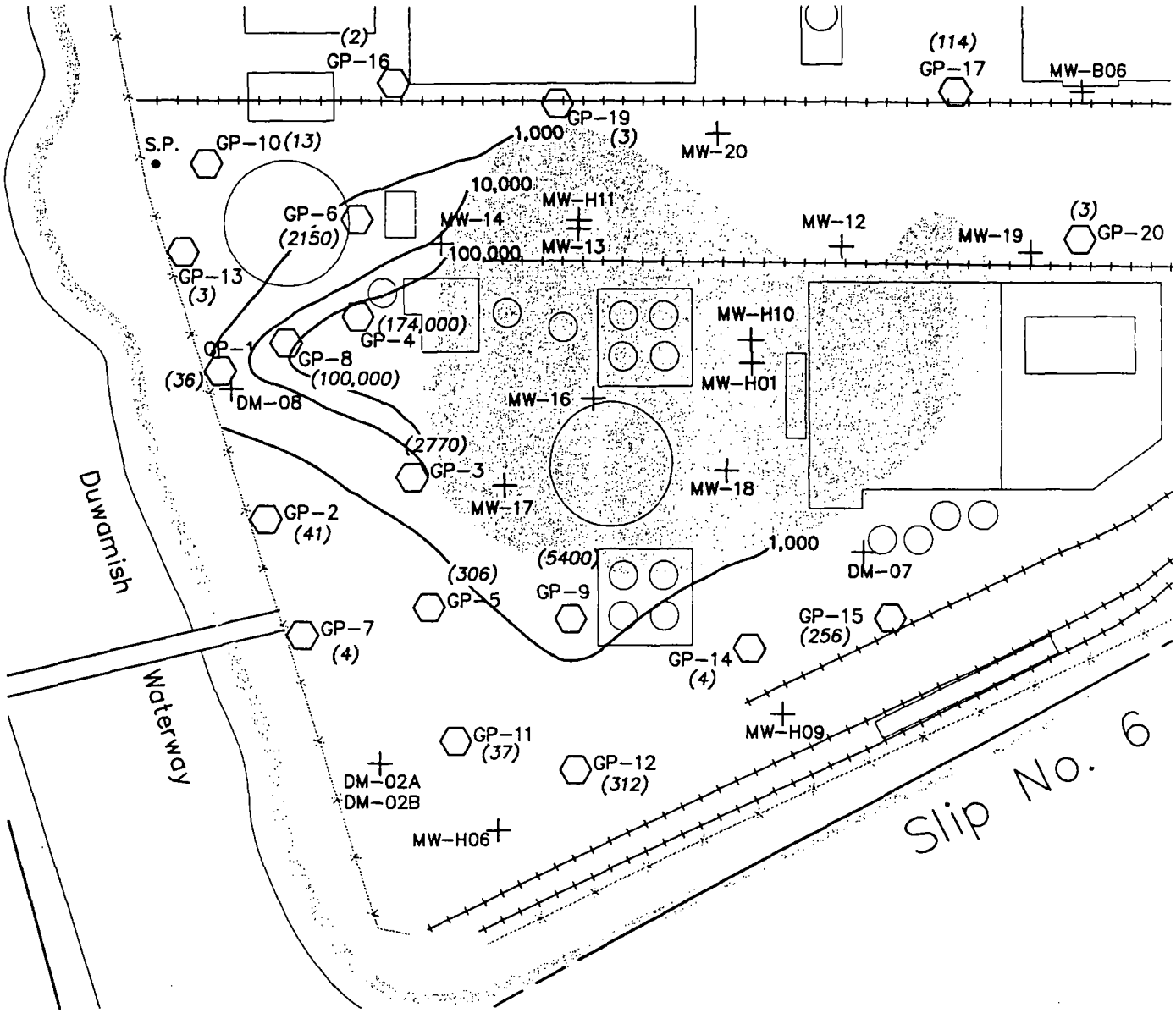
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: 19400373.0001
DRAWING: 11613_8
DRAFTED BY: MAC
CHECKED BY: JB
APPROVED BY: JB

GEOPROBE™ SAMPLING LOCATIONS
RHÔNE-POULENC FACILITY
TUKWILA, WA.

FIGURE NO. 1

FILENAME: 11613A_8\11613_8B.DWG CREATED: DEC 09 1997 13:33:53 UPDATED: DEC 18 1997 14:23:14 PLOTTED: DEC 18 1997 14:23:31 (WSM31/N)



LEGEND

DM OR MW + — MONITORING WELL

GP-11 (2700) — GEOPROBE SAMPLING LOCATIONS TOLUENE CONCENTRATION (ug/L)

FENCE

RAILROAD

PREVIOUSLY DEFINED TOLUENE PLUME FOR CONCENTRATION > 1000 ug/L (CH_2MHILL 1995)

ESTIMATED TOLUENE ISOCONCENTRATION LINE (ug/L) BASED ON GEOPROBE™ SAMPLING

N

0 40 80
SCALE IN FEET

NOTES:
1) TOLUENE CONCENTRATIONS ARE MAXIMUM AT PARTICULAR LOCATION AT ANY DEPTH.

2) DM-08 IS A MEASUREMENT FROM 11/97 GEOPROBE™ SAMPLING EVENT

GERAGHTY & MILLER, INC.
Environmental Services
A Halliburton Company

SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE REPRODUCTION SCALE

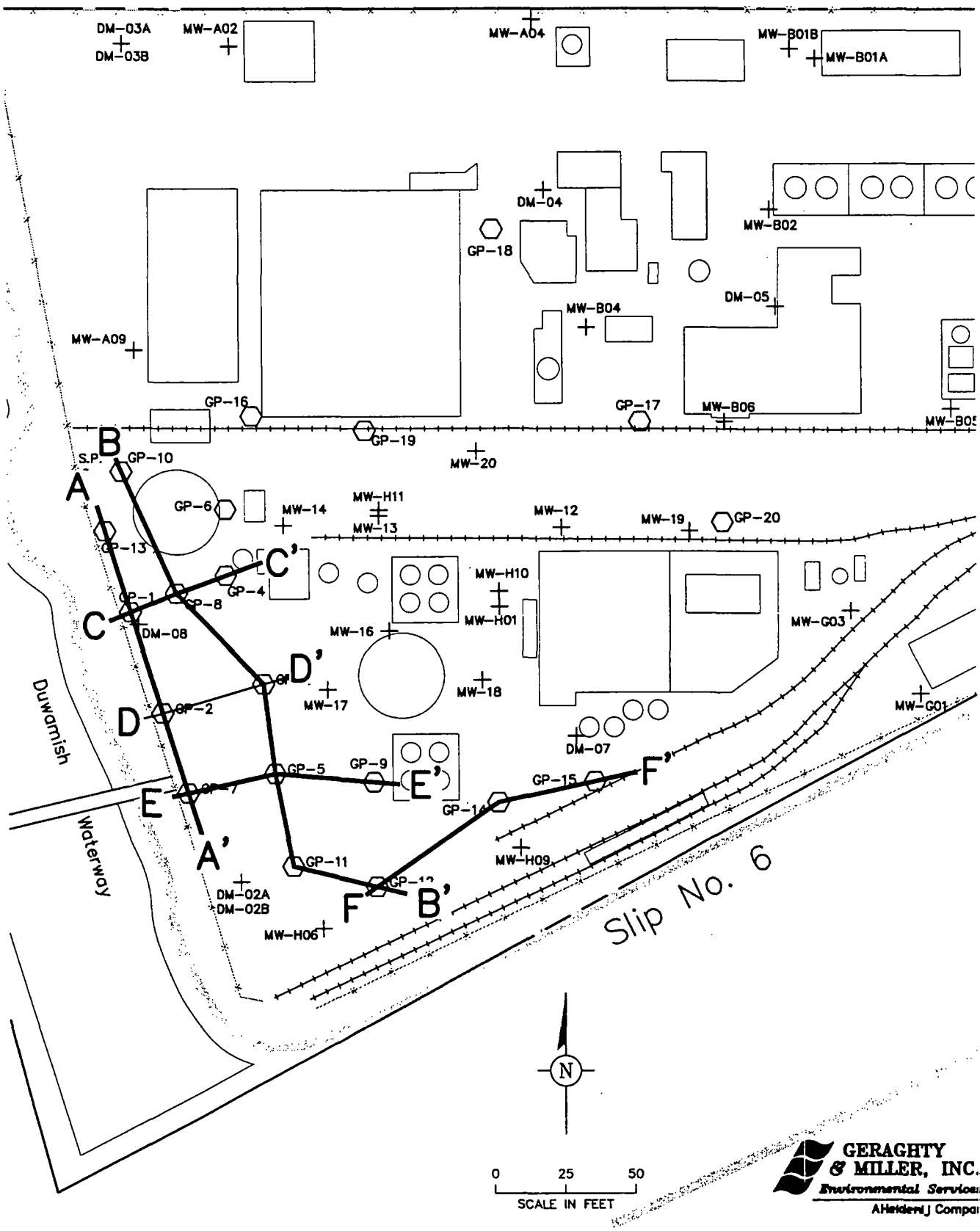
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: WP000373.0001
DRAWING: 1343_8
DRAFTED BY: MAS
CHECKED BY: MJS
APPROVED BY: MJS

LATERAL DISTRIBUTION OF TOLUENE
NOV. 1997 GEOPROBE™ SAMPLING EVENT
RHÔNE-POULENC FACILITY
TUKWILA, WA.

FIGURE NO. 2

FILENAME: 11613A_8\11613_8B.DWG CREATED: DEC 09 1997 13:33:53 UPDATED: DEC 18 1997 14:23:14 PLOTTED: DEC 18 1997 14:23:31 (WS#31/N) @ DDWL 1997



GERAGHTY & MILLER, INC.
Environmental Services
A Halliburton Company

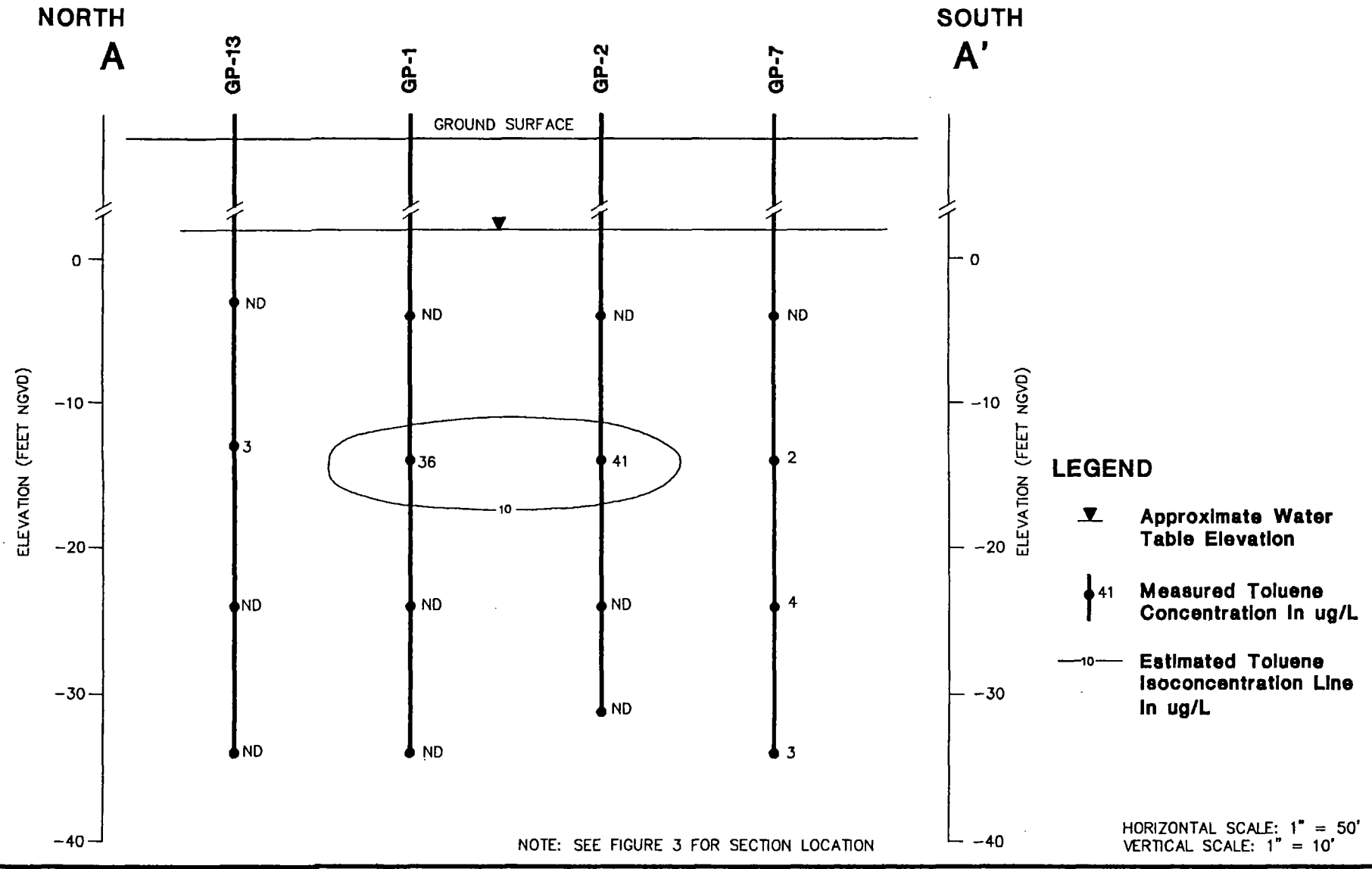
SCALE VERIFICATION	REV. NO.	DATE	DESCRIPTION	BY	APPR.
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE					

PROJECT NO.: 0000373.0001
DRAWING: 11613_8
DRAFTED BY: MNG
CHECKED BY: MJS
APPROVED BY: MJS

CROSS SECTION LOCATION MAP
RHÔNE-POULENC FACILITY
TUKWILA, WA.

FIGURE NO. 3

DWG DATE: 12-18-97 | PRJCT NO.: WA0373.001 | FILE NO.: R-PXSA | DRAWING: R-PXSA | CHECKED: JPB | APPROVED: JPB | DRAFTER: SAC



GERAGHTY & MILLER, INC.
Environmental Services

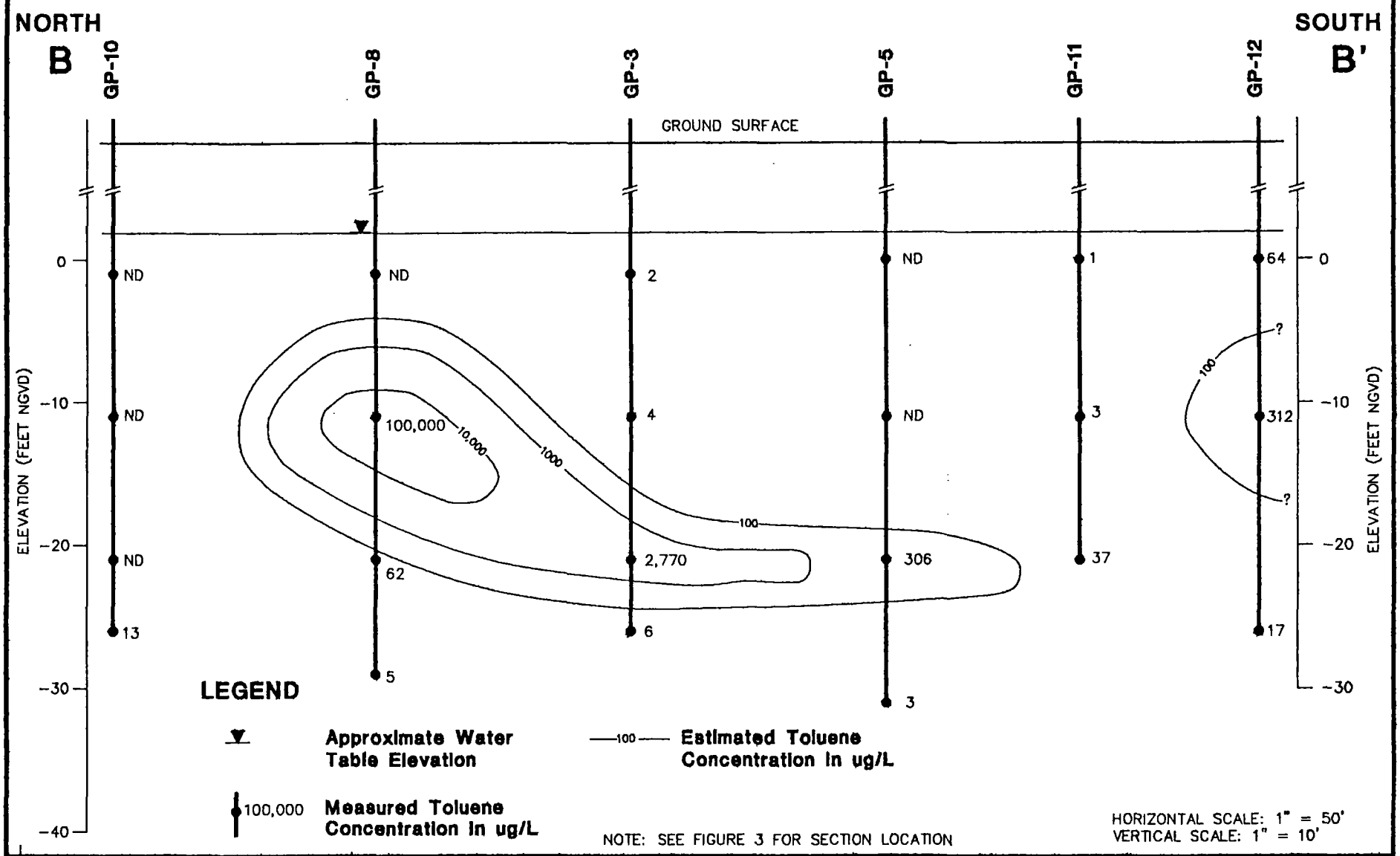
SECTION A - A' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc Inc.

Tukwila, Washington

FIGURE 4

DWG DATE: 12-18-97	PRJCT NO.: WA0373.001	FILE NO.: R-PXSB	DRAWING: R-PXSB	CHECKED: JPB	APPROVED: JPB	DRAFTER: SAC



NOTE: SEE FIGURE 3 FOR SECTION LOCATION

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

GERAGHTY & MILLER, INC.
Environmental Services

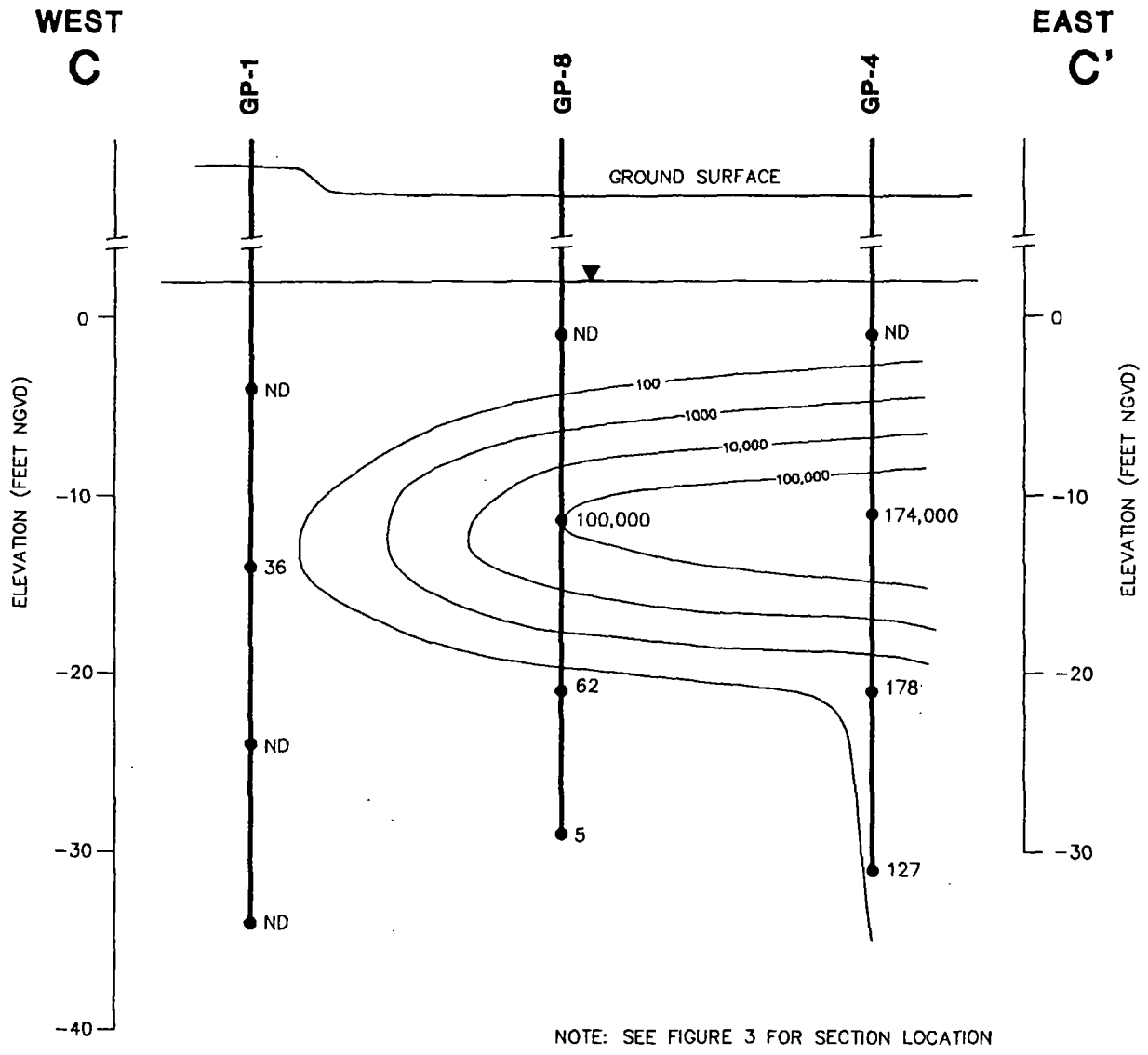
SECTION B - B' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc Inc.

Tukwila, Washington

FIGURE 5

DWG DATE: 12-18-97 | PRJCT NO.: WA0373.001 | FILE NO.: R-PXSC | DRAWING: R-PXSC | CHECKED: JPB | APPROVED: JPB | DRAFTER: SAC



LEGEND

- ▼ **Approximate Water Table Elevation**
- 174,000 **Measured Toluene Concentration in ug/L**
- —100— **Estimated Toluene Isoconcentration Line in ug/L**

NOTE: SEE FIGURE 3 FOR SECTION LOCATION

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

GERAGHTY & MILLER, INC.
Environmental Services

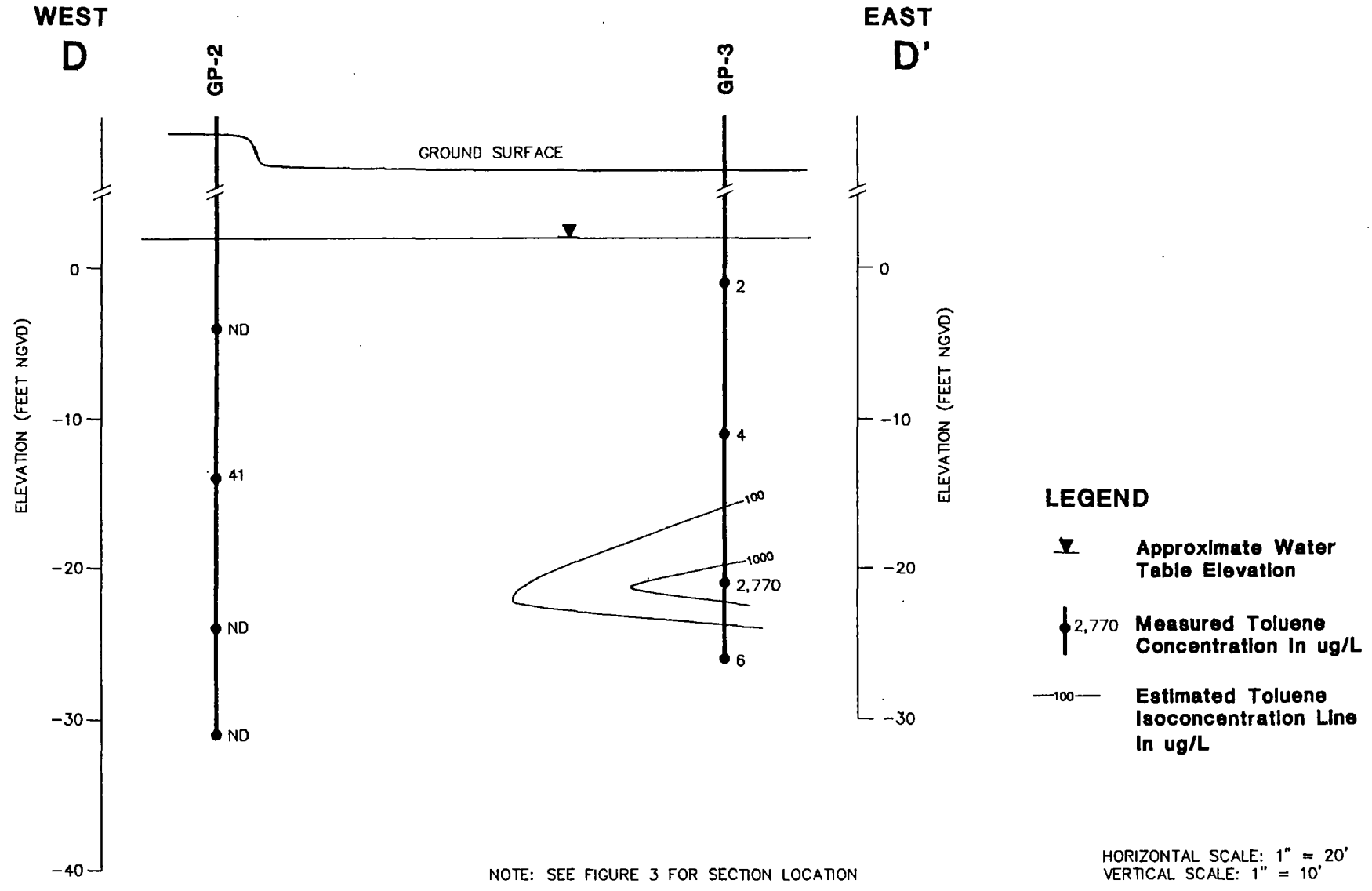
SECTION C- C' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc inc.

Tukwila, Washington

FIGURE 6

DWG DATE: 12-18-97	PRJCT NO.: WA0373.001	FILE NO.: R-PXSD	DRAWING: R-PXSD	CHECKED: JPB	APPROVED: JPB	DRAFTER: SAC



NOTE: SEE FIGURE 3 FOR SECTION LOCATION

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

GERAGHTY & MILLER, INC.
Environmental Services

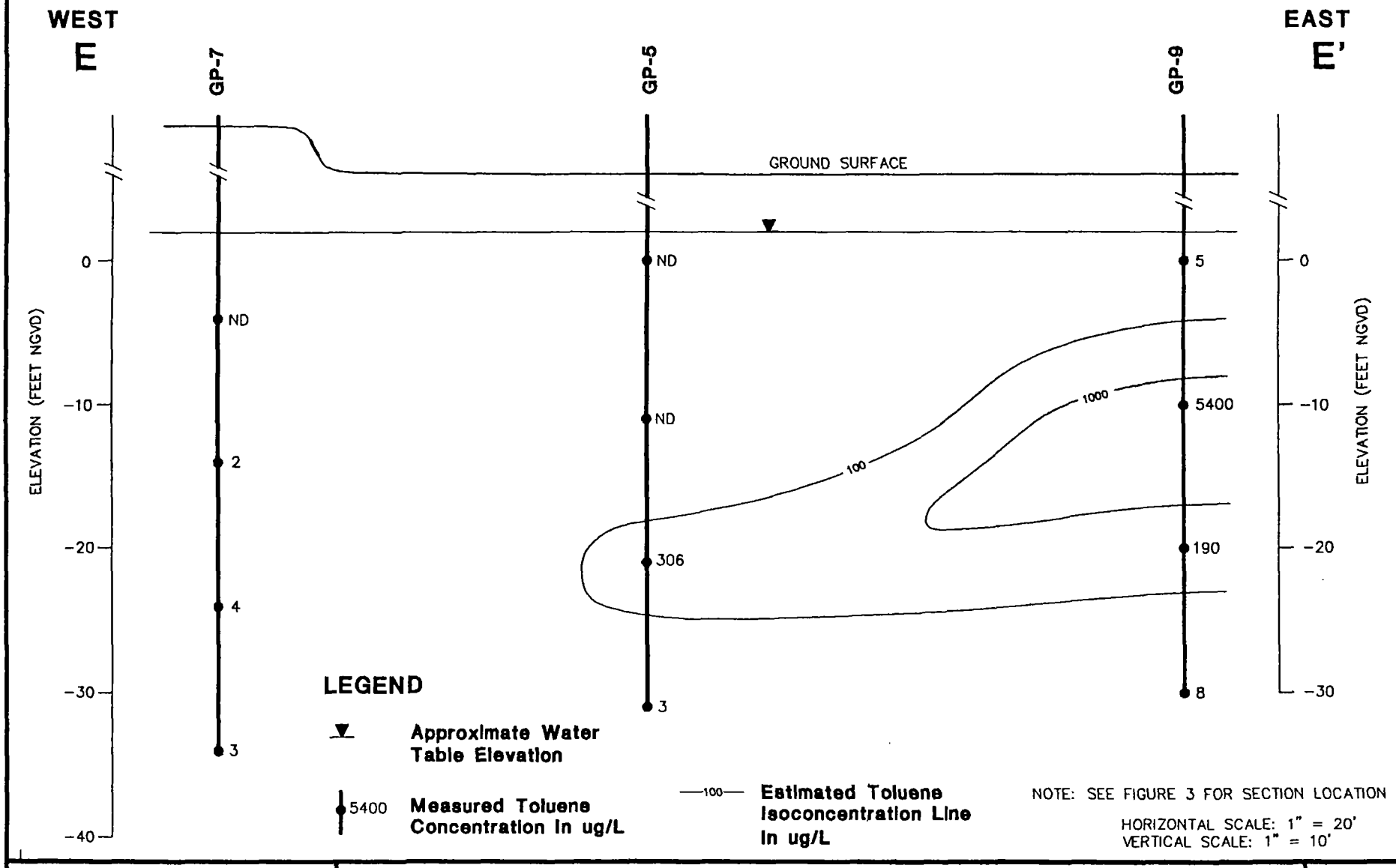
SECTION D - D' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc inc.

Tukwila, Washington

FIGURE
7

DWG DATE: 12-18-97 | PRJCT NO.: WA0373.001 | FILE NO.: R-PXSE | DRAWING: R-PXSE | CHECKED: JPB | APPROVED: JPB | DRAFTER: SAC



GERAGHTY & MILLER, INC.
Environmental Services

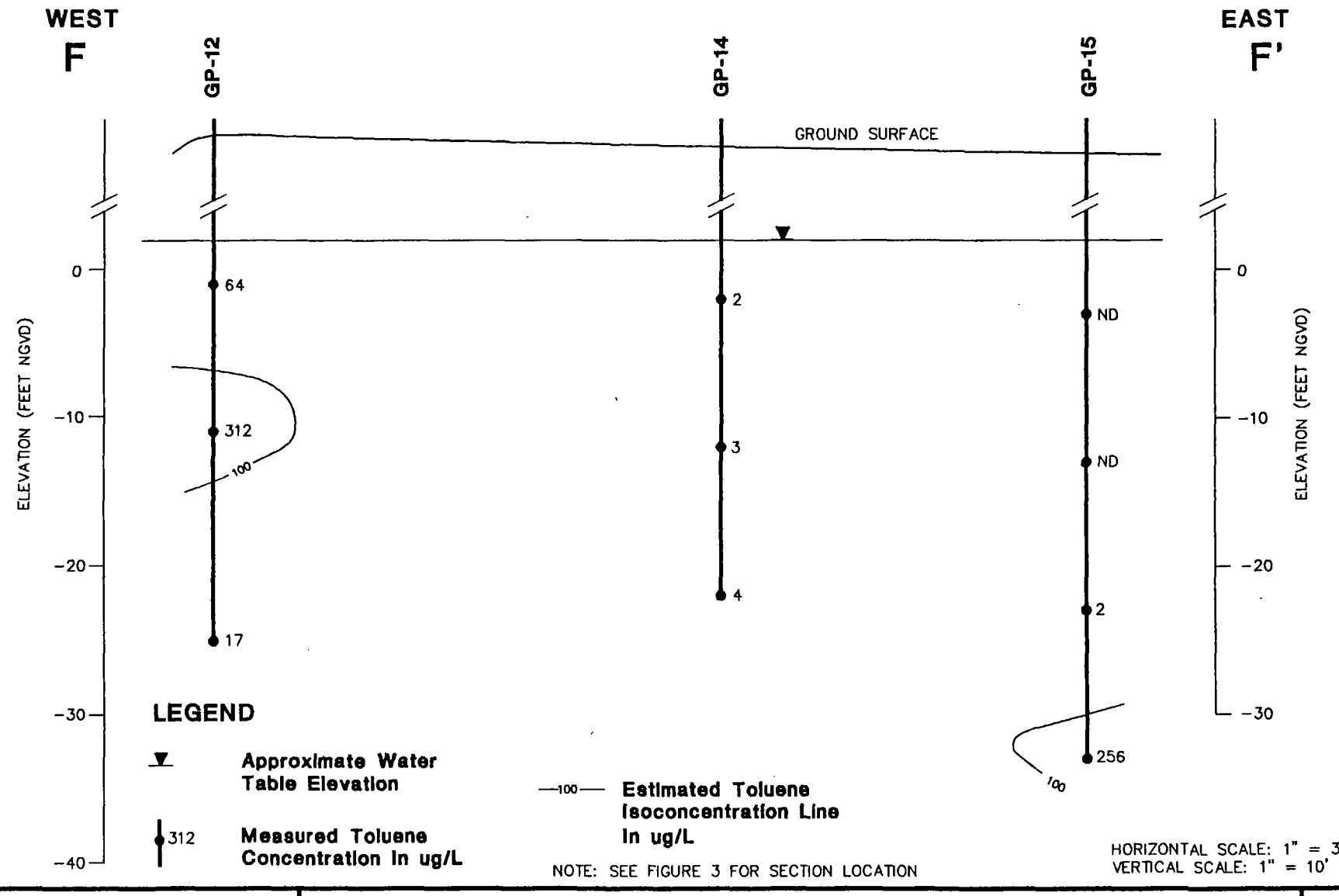
SECTION E - E' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc inc.

Tukwila, Washington

FIGURE
8

DWG DATE: 12-18-97	PRJCT NO.: WA0373.001	FILE NO.: R-PXSF	DRAWING: R-PXSF	CHECKED: JPB	APPROVED: JPB	DRAFTER: SAC



GERAGHTY & MILLER, INC.
Environmental Services

SECTION F - F' TOLUENE CONCENTRATIONS GEOPROBE GROUNDWATER SAMPLING

Rhone-Poulenc Inc.

Tukwila, Washington

FIGURE 9

APPENDIX A

APPENDIX A

Transglobal Environmental
Groundwater Sampling Equipment Specifications

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, WA 98503-7174
(360) 459-4670
Fax: 459-3432

FAX TRANSMITTAL

DATE: 12/18 TOTAL PAGES SENT: _____

TO: Lexie Jones.

ADDRESS: GTM

FAX #: _____ PHONE #: _____

FROM: Mike Korosec
TEG NORTHWEST, INC.

COMMENTS: Here are the specs for the 2 water samples. I hope this will help. If there are additional questions, Please call.

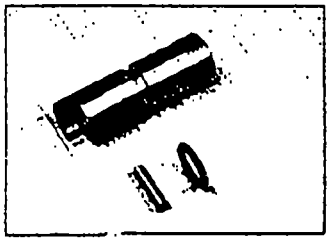
MK.

"TEG - The World Leader in On-Site Sampling and Analysis"

Ground Water Sampling Tools – Screen Point Sampler

KIT

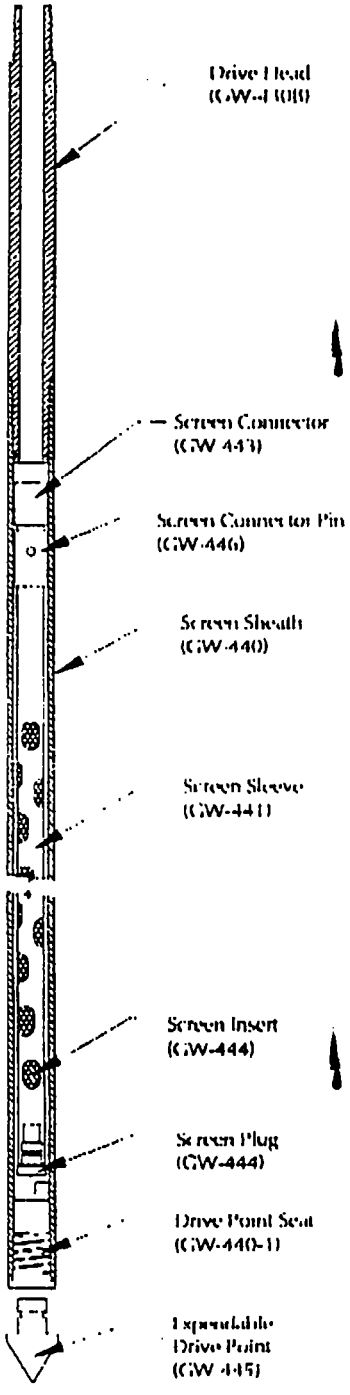
GW-440K Assembled Screen Point Sampler includes:	
GW-430B	(1) GW Sampler Drive Head
GW-430R	(25) O-Rings for Drive Head
GW-440	(1) GW Sampler Sheath
GW-440-1	(1) GW Drive Point Seat
GW-440-1R	(25) O-Rings for Drive Point Seat
GW-441	(1) Screen Sleeve
GW-443	(1) Screen Connector
GW-443R	(25) O-Rings for Screen Connector
GW-444	(1) Screen Insert and Plug
GW-444R	(25) O-Rings for Screen Plug
GW-445	(25) GW Expendable Drive Points
GW-445R	(25) O-Rings for Drive Points
GW-446	(1) Screen Connector Pin
GW-447	(1) Screen Connector Pin Punch
AT-102	(1) O-Ring Pick



New O-rings should be used at each O-ring location prior to each sample. Shown here is the Screen Connector (GW-443), O-ring (GW-443R), and Screen Connector Pin (GW-446).

The O-Ring Pick (AT-102) is a handy tool to help remove O-rings. One is included in each Screen Point Sampler Kit (GW-440K).

Partially assembled Screen Point Sampler (GW-440K).



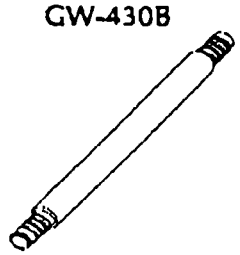
Cross Section of Assembled Screen Point Sampler (GW-440K)

Groundwater Sampling Tools

Ground Water Sampling Tools – Screen Point Sampler

QUICK PARTS GUIDE:

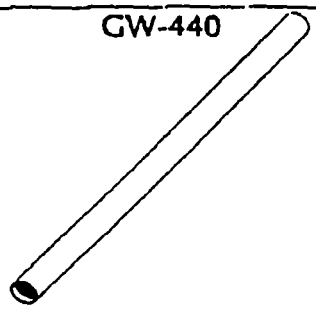
GW Sampler Drive Head
GW-430B



GW-430R

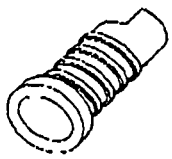
8.5 in. long x 1.0 in. I.D. (216 mm x 25 mm), 0.5 in. I.D. (13 mm).

Sampler Sheath
GW-440



27 in. long x 1.0 in. O.D. (686 mm x 25 mm), 0.76 in. I.D. (19 mm).

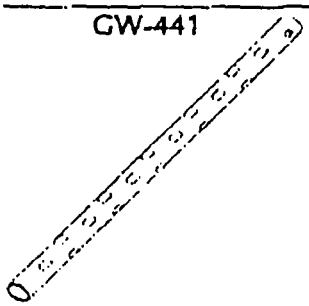
GW Drive Point Seat
GW-440-1



GW-440-1R

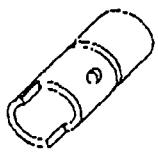
Fits end of Sampler Sheath. Holds Expendable Drive Point in place.

GW Screen Sleeve
GW-441



22.7 in. long x 0.56 in. O.D. (577 mm x 14 mm), 0.44 in. I.D. (11 mm).

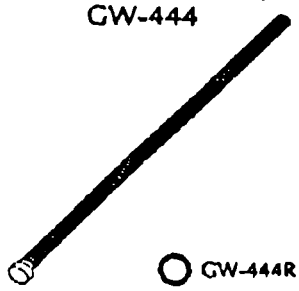
GW Screen Connector
GW-443



GW-443R

Stainless Steel. Top end has left-hand threaded PRT fitting.

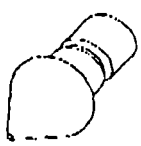
GW Screen Insert & Plug
GW-444



GW-444R

22.25 in. (565 mm) length. 0.145 mm pore size, .375 in. O.D. (9.5 mm).

Expendable Drive Point
GW-445



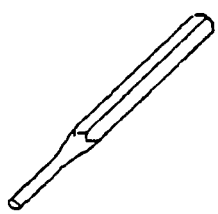
GW-445R

Steel, 1.1 in. (28 mm) maximum O.D., .625 in. (16 mm) O.D. shaft.

Screen Connector Pin
GW-446

Stainless Steel.
Holds Screen Connector in place.

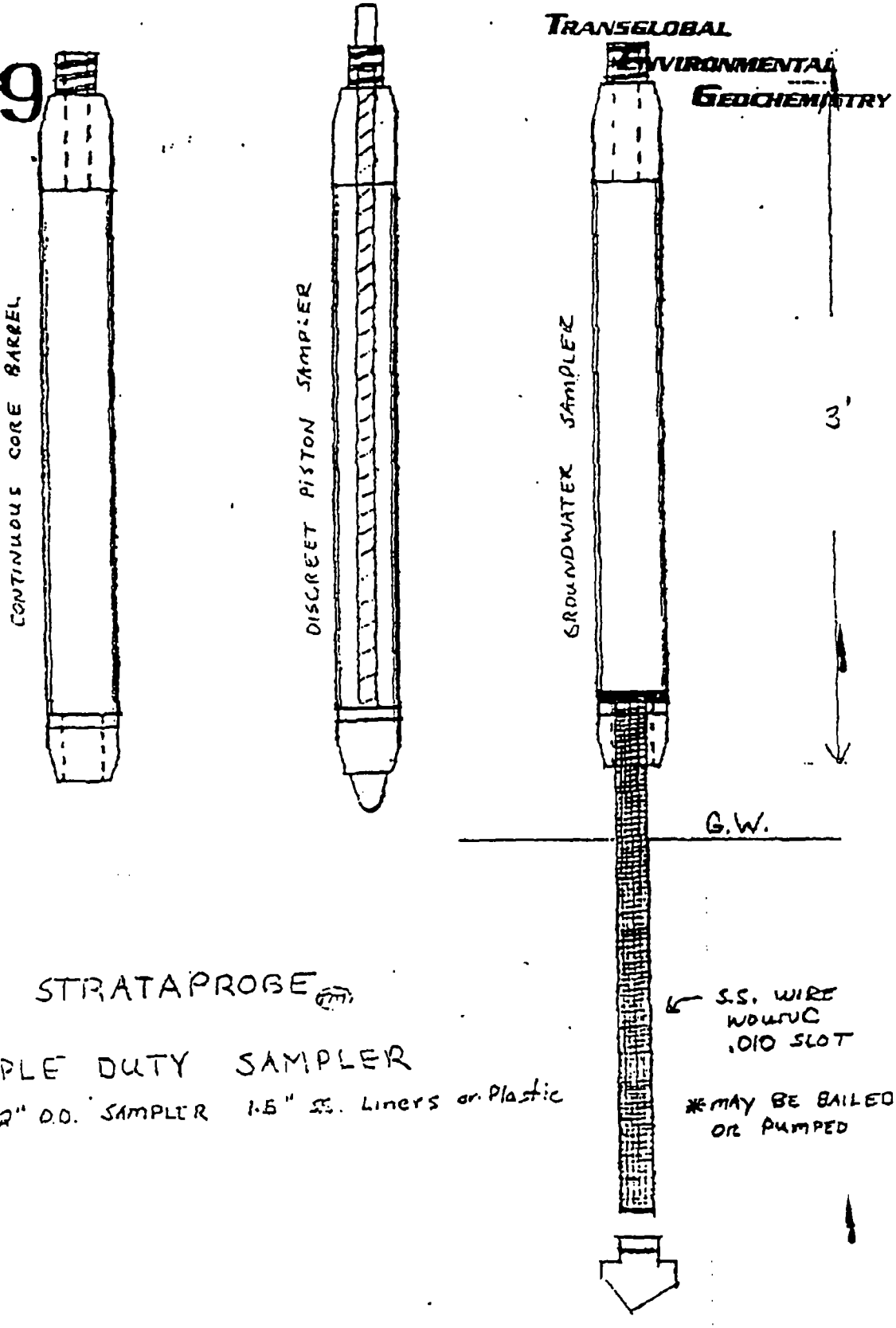
Screen Connector Punch
GW-447



Used for installation and removal of Screen Connector Pin.

teg

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY



STRATAPROBE®

TRIPLE DUTY SAMPLER

2" O.D. SAMPLER 1.5" I.D. Liners or Plastic

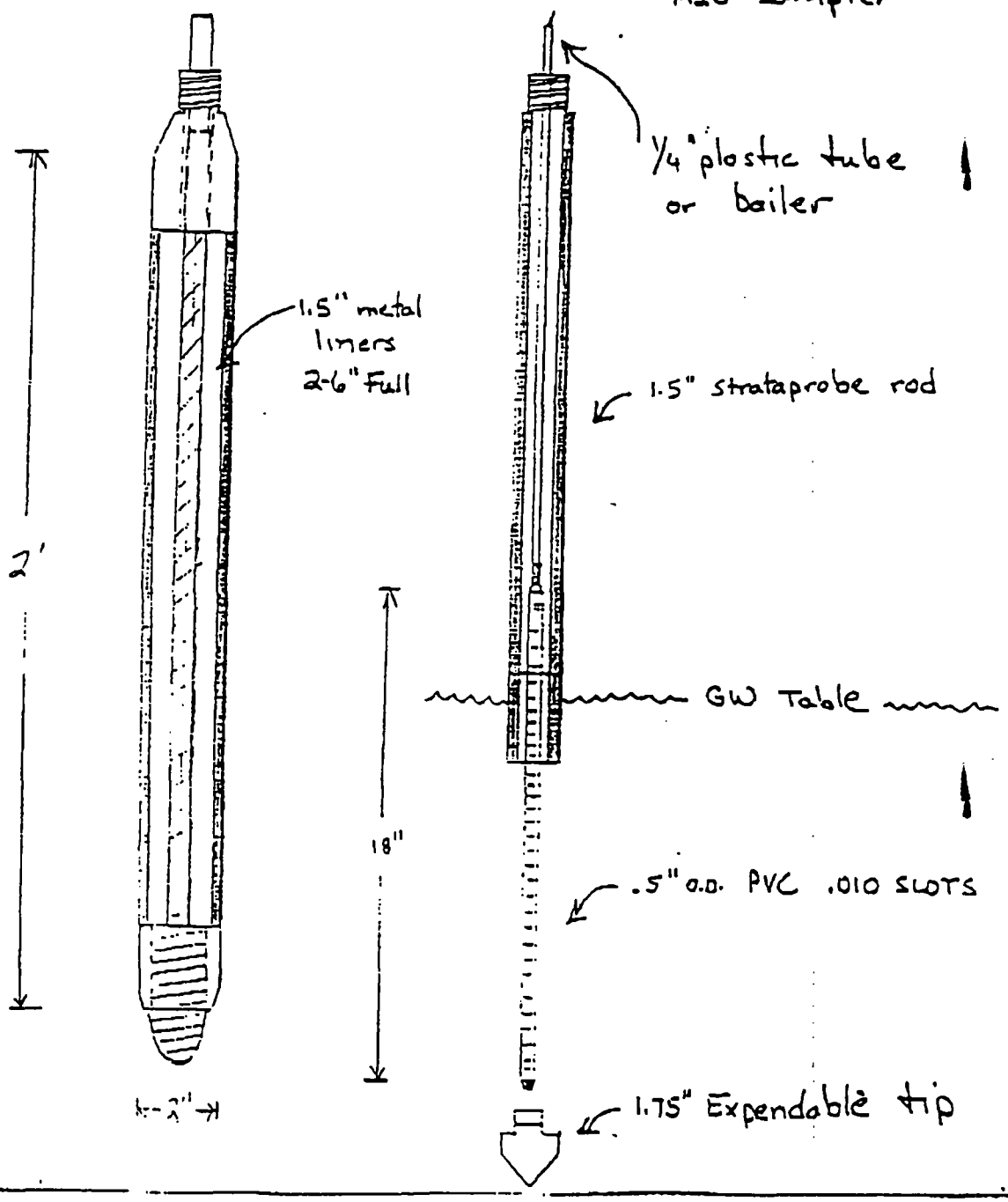
432 N. Cedros Ave., Solana Beach, CA 92075 Ph: (619) 793-0401 Fax: (619) 793-0404

teg

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY

2" SPLIT TUBE PISTON SAMPLER

STRATAPROBE H_2O sampler



432 North Cedros Avenue, Solana Beach, CA 92075-1855 Ph: (619)793-0401 Fax: (619)793-0404

APPENDIX B

APPENDIX B

Transglobal Environmental Chain-of-Custody Forms

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller, Inc.
ADDRESS: 8330 154th Ave. NE Redmond, WA 98052
PHONE (425) 869-6321 FAX: (425) 869-6963
CLIENT PROJECT #: PROJECT MANAGER: Jay Bower

DATE: 11/18/97 PAGE 1 OF 1
PROJECT NAME: Rhone-Poulenc
LOCATION: Marginal Way Facility
COLLECTOR: KV/TL (TEG) DATE OF COLLECTION 11/18/97

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene 8020	FIELD NOTES	Total Number of Containers	Laboratory Note Number
GP-1-1	20-22	1002	H_2O	40ml Vial															X				
GP-2-1	20-22	1007																	X				
GP-1-2	~~30~~ 29-31	1015																	X				
GP-2-2	27-29	1055																	X				
GP-2-3	34-42	1150																	X				
GP-1-4	50-52	1225																	X				
GP-2-4	46-49	1235																	X				
GP-3-1	15-17	1340																	X				
GP-4-1	14-17	1400																	X				
GP-3-2	25-27	1405																	X				
GP-4-2	24-27	1430																	X				
GP-3-3	35-37	1442																	X				
GP-4-3	34-37	1517																	X				
GP-3-4	40-42	1615																	X				
GP-4-4	45-47	1619																	X				
~~GP-2-2~~ Dup																							
GP-1-3	39-41	1145																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	11/18/97 1630	[signature]	11/18/97 1630
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS
☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
BTL RPI

TEG TRILOBITE ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller, Inc.
ADDRESS: 8330
PHONE (425) 869-6321 FAX:
CLIENT PROJECT #: PROJECT MANAGER: Jay Beaver

DATE: 11/19/97 PAGE 1 OF 2
PROJECT NAME: Rhone-Poulenc
LOCATION: Seattle WA
COLLECTOR: KV, TK DATE OF COLLECTION 11/19/97

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene 8020	FIELD NOTES	Total Number of Containers	Laboratory Note Number
GP-6-1	(14-17)	815	W,C																X				
GP-5-1	(14-16)	835																	X				
GP-5-2	(25-27)	853																	X				
GP-6-2	(25-27)	906																	X				
~~GP-5~~ (WELL)																							
GP-5-3	(35-37)	935																	X				
GP-6-3	(35-37)	950																	X				
GP-5-4	45-47	1020																	X				
GP-7-1	20-22	1118																	X				
GP-8-1	15-17	1125																	X				
GP-7-2	30-32	1150																	X				
GP-8-2	25-27	1155																	X				
GP-7-3	40-42	1217																	X				
GP-8-3	35-37	1235																	X				
GP-7-4	50-52	1305																	X				
GP-8-4	43-45	1323																	X				
GP-9-1	15-17	1345																	X				
GP-9-2	25-27	1410																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	11/19/97 1700	[signature]	11/19/97 1700
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS
CHAIN OF CUSTODY SEALS Y/N/NA
SEALS INTACT? Y/N/NA
RECEIVED GOOD COND./COLD
NOTES:

LABORATORY NOTES:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller

ADDRESS:

PHONE FAX:

CLIENT PROJECT #: PROJECT MANAGER:

DATE: 11/19/97 PAGE 2 OF 2

PROJECT NAME: Rhone Polenc

LOCATION: Seattle, Wa

COLLECTOR: KV, TK DATE OF COLLECTION 11/17/97

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene #C-20	FIELD NOTES	Total Number of Containers	Laboratory Note Number
GP-10-1	15-17	1413	1/2 o																X				
GP-10-2	25-27	1445																	X				
GP-9-3	35-37	1450																	X				
GP-10-3	35-37	1515																	X				
GP-9-4	40-42	1540																	X				
GP-10-4	45-47	1550																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	11/19/97 1700		11/19/97 1700
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

[ ]TEG DISPOSAL @ $2.00 each [ ] Return [ ] Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

TRIAD ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller (Rhone-Poulenc)
ADDRESS:
PHONE (425) 869-6321 FAX: (425) 869-6369
CLIENT PROJECT #: PROJECT MANAGER: Jay Bower

DATE: 11/20/97 PAGE 1 OF 2
PROJECT NAME: Rhone-Poulenc
LOCATION: Seattle Wa
COLLECTOR: MKV, TK DATE OF COLLECTION 11/20/9

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene 8020	FIELD NOTES	Total Number of Containers	Laboratory
GP-11-1	15-17	820	H_2O	40ml Vial															X				
GP-11-2	25-27	840																	X				
GP-11-3	35-37	918																	X				
GP-12-1	15-17	930																	X				
GP-11-4	40-42	1000																	X				
GP-12-2	25-27	1020																	X				
GP-13-1	19-21	1030																	X				
GP-13-2	29-31	1107																	X				
GP-12-4	45-47	1152																	X				
GP-13-3	40-42	1200																	X				
GP-13-4	50-52	1225																	X				
GP-14-1	15-17	1240																	X				
GP-15-1	15-17	1245																	X				
GP-14-2	25-27	1300																	X				
GP-15-2	25-27	1310																	X				
GP-13-3	35-37	1335																	X				
GP-14-3	35-37	1345																	X				
GP-15-4	45-47	1350																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	11-20-97 1720	[signature]	11/20/97 1720
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller (Rhone Poulenc)

ADDRESS:

PHONE (425) 869-6361 FAX: (425) 869-6369

CLIENT PROJECT #: PROJECT MANAGER: Jay Bowers

DATE: 11/20/97 PAGE 2 OF 2

PROJECT NAME: Rhone - Poulenc

LOCATION: Seattle Wa

COLLECTOR: KV, TK DATE OF COLLECTION

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Tekmar 8020	FIELD NOTES	Total Number of Containers	Laboratory Note Number
GP-16-1	15-17	1420	H_2O	40ml Vial															X				
GP-16-2	25-27	1100																	X				
GP-16-3	35-37	1520																	X				
GP-16-4	45-47	1550																	X				
GP-17-1	15-17	1615																	X				
GP-17-2	25-27	1630																	X				
GP-18-1	15-17	1635																	X				
GP-17-3	35-37	1700																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	11-20-97 1720		11/20/97 1720
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

[ ] TEG DISPOSAL @ $2.00 each [ ] Return [ ] Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty & Miller, Inc.

ADDRESS:

PHONE (425) 869-6321 FAX: (425) 869-6369

CLIENT PROJECT #: PROJECT MANAGER: Jay Bowser

DATE: 11-20-97 PAGE 1 OF 1

PROJECT NAME: Rhone-~~Botcrez~~ Poulenc

LOCATION: Seattle, WA

COLLECTOR: CM / PN DATE OF COLLECTION 11/20/97

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene 8020	FIELD NOTES	Total Number of Containers	Laboratory Note Number
DH-B-33	33	1540	H_2O																X				
DH-B-23	23	1530	H_2O																X				

RELINQUISHED BY (Signature) DATE/TIME: 11-20-97 1720

RECEIVED BY (Signature) DATE/TIME: 11/20/97 1720

RELINQUISHED BY (Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS

CHAIN OF CUSTODY SEALS Y/N/NA

SEALS INTACT? Y/N/NA

RECEIVED GOOD COND./COLD

NOTES:

LABORATORY NOTES:

TRA[redacted]OBA[redacted]
ENVIRONMENTAL
GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Geraghty + Miller

ADDRESS:

PHONE (425) 869-6321 FAX: (425) 869-6369

CLIENT PROJECT #: PROJECT MANAGER: Jay Bowers

DATE: 11/21/97 PAGE 1 OF 1

PROJECT NAME: Rhone-Poulenc

LOCATION: Seattle Wa

COLLECTOR: TK DATE OF COLLECTION 11/21/97

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	Toluene 8020	FIELD NOTES	Total Number of Containers	Laboratory Note Number
GP-18-2	25-27	1030	H_2O	40ml Vial															X				
GP-18-3	35-37	1105																	X				
GP-18-4	45-47	1140																	X				
GP-19-1	15-17	1240																	X				
GP-19-2	25-27	1335																	X				
GP-19-3	35-37	1350																	X				
GP-19-4	45-47	1455																	X				
GP-20-1	15-17	1525																	X				
GP-20-2	25-27	1545																	X				
GP-20-3	35-37	1604																	X				
GP-20-4	45-47	1640																	X				
Comp-1	comp	1645																	X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	11-21-97 1700	[signature]	11/21/97 1700
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

APPENDIX C

APPENDIX C

Transglobal Environmental Analytical Results

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

December 3, 1997

Jay Bower
Geraghty & Miller Inc.
8330 154th Ave NE
Redmond, WA 98052

Dear Mr. Bower:

Please find enclosed the analytical data report for the Rhone-Poulenc Project in Seattle, Washington. StrataProbe collection and mobile laboratory analyses of water samples was conducted at the Project site on November 18, 19, 20 and 21, 1997. The water samples were analzyed for Toluene by EPA Method 8020.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for the sample collection and analytical work is also enclosed. Please note that the invoice for this work has been sent to Mr. Edwin Liu at Rhone-Poulenc in Monmouth, New Jersey.

TEG Northwest appreciates the opportunity to have provided mobile laboratory and geosampling services to Geraghty & Miller for this project. It was a pleasure working with you, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A. Korosec
President

cc: Edwin Liu, Rhone Poulenc, Inc.
Black Horse Lane
Monmouth Junction, New Jersey 08852

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4° C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

Purgeable Volatile Aromatics
(Toluene, EPA 602/8020)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
Meth. Blank	11/18/97	nd	92
GP-1-1	11/18/97	nd	90
GP-1-2	11/18/97	36	96
GP-1-2 Dup	11/18/97	33	102
GP-1-3	11/18/97	nd	95
GP-1-4	11/18/97	nd	94
GP-2-1	11/18/97	nd	87
GP-2-2	11/18/97	41	88
GP-2-3	11/18/97	nd	89
GP-2-4	11/18/97	nd	96
GP-3-1	11/18/97	2	94
GP-3-2	11/18/97	4	85
GP-3-2 Dup	11/18/97	4	95
GP-3-3	11/18/97	2770	90
GP-3-4	11/18/97	6	92
GP-4-1	11/18/97	nd	95
GP-4-2	11/18/97	174000	93
GP-4-3	11/18/97	178	96
GP-4-4	11/18/97	127	97
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
Meth. Blank	11/19/97	nd	98
GP-5-1	11/19/97	nd	94
GP-5-2	11/19/97	nd	96
GP-5-3	11/19/97	306	90
GP-5-4	11/19/97	3	98
GP-6-1	11/19/97	3	95
GP-6-1 Dup	11/19/97	4	99
GP-6-2	11/19/97	2150	98
GP-6-3	11/19/97	8	100
GP-7-1	11/19/97	nd	97
GP-7-2	11/19/97	2	99
GP-7-3	11/19/97	4	95
GP-7-4	11/19/97	3	103
GP-8-1	11/19/97	nd	91
GP-8-2	11/19/97	100000	112
GP-8-3	11/19/97	62	99
GP-8-3 Dup	11/19/97	63	101
GP-8-4	11/19/97	5	100
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
GP-9-1	11/19/97	5	97
GP-9-2	11/19/97	5400	94
GP-9-3	11/19/97	190	96
GP-9-4	11/19/97	8	93
GP-10-1	11/19/97	nd	93
GP-10-2	11/19/97	nd	98
GP-10-3	11/19/97	nd	92
GP-10-3 Dup	11/19/97	nd	90
GP-10-4	11/19/97	13	98
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
Meth. Blank	11/20/97	nd	89
GP-11-1	11/20/97	1	92
GP-11-1 Dup	11/20/97	1	94
GP-11-2	11/20/97	3	94
GP-11-3	11/20/97	37	95
GP-11-4	11/20/97	1	77
GP-12-1	11/20/97	64	95
GP-12-2	11/20/97	312	97
GP-12-4	11/20/97	17	106
GP-13-1	11/20/97	nd	98
GP-13-2	11/20/97	3	98
GP-13-3	11/20/97	nd	98
GP-13-4	11/20/97	nd	96
GP-13-4 Dup	11/20/97	nd	99
GP-14-1	11/20/97	2	100
GP-14-2	11/20/97	3	99
GP-14-3	11/20/97	4	99
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
GP-15-1	11/20/97	nd	97
GP-15-2	11/20/97	nd	99
GP-15-3	11/20/97	2	97
GP-15-4	11/20/97	256	97
GP-15-4 Dup	11/20/97	200	99
GP-16-1	11/20/97	1	95
GP-16-2	11/20/97	nd	92
GP-16-3	11/20/97	1	94
GP-16-4	11/20/97	2	99
GP-17-1	11/20/97	7	97
GP-17-2	11/20/97	114	95
GP-17-3	11/21/97	1	95
DM8-23	11/20/97	9110	83
DM8-33	11/20/97	572	95
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

RHONE - POULENC PROJECT
Seattle, Washington
Geraghty & Miller, Inc.

TOLUENE (EPA 8020) Analyses for Water

Sample Number	Date Analyzed	Toluene ug/l	Recovery (%)
Meth. Blank	11/21/97	nd	100
GP-18-1	11/21/97	1	103
GP-18-1 Dup	11/21/97	1	91
GP-18-2	11/21/97	1	102
GP-18-3	11/21/97	nd	103
GP-18-4	11/21/97	5	102
GP-19-1	11/21/97	nd	100
GP-19-2	11/21/97	nd	99
GP-19-3	11/21/97	1	101
GP-19-4	11/21/97	3	101
GP-20-1	11/21/97	1	97
GP-20-2	11/21/97	1	93
GP-20-2 Dup	11/21/97	1	95
GP-20-3	11/21/97	nd	98
GP-20-4	11/21/97	3	97
COMP-1	11/21/97	4	92
Detection Limits		1	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.